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NEW MEASURES OF THE BUSINESS CYCLE

By CARL SNYDER

SINCE the alternation from periods of prosperity to depression, and especially from boom to industrial crisis, is fraught with such far-reaching social and industrial consequences, it would be of great interest if we could establish exact measures of these waves of business activity, as we can measure the waves of the sea. It would be of especial value if we could establish that there are minima of depression below which the business level does not sink, and, on the other hand, maxima above which this level rarely or never rises. It would be equally fruitful, if it were possible, to know from month to month our exact position—to change the metaphor—above or below the line of normal industrial and business growth.

Two notable essays at such determinations have been made, the first by the statistics department of the American Telephone and Telegraph Company, reported by Colonel Rorty in one of the initial numbers of this REVIEW;[1] the second by Professor Persons, from a quite different angle, reported last year.[2] Previous to these there have been several endeavors to measure the industrial growth, or production, in leading industries from year to year, by King,[3] Stewart,[4] Day,[5] and Snyder,[6] the last of these studies covering a period from 1870 to 1920. These studies established the interesting fact of an average or normal rate of growth of productive activity running close to 3½% per annum; but these computations from annual data did not permit of any close measurement of the ups

[1] Rorty, Malcolm C., "Statistical Control of Business Activities," HARVARD BUSINESS REVIEW, Vol. I, p. 154.

[2] Persons, Warren M., "An Index of Trade for the United States," *The Review of Economic Statistics*, Vol. V, p. 71.

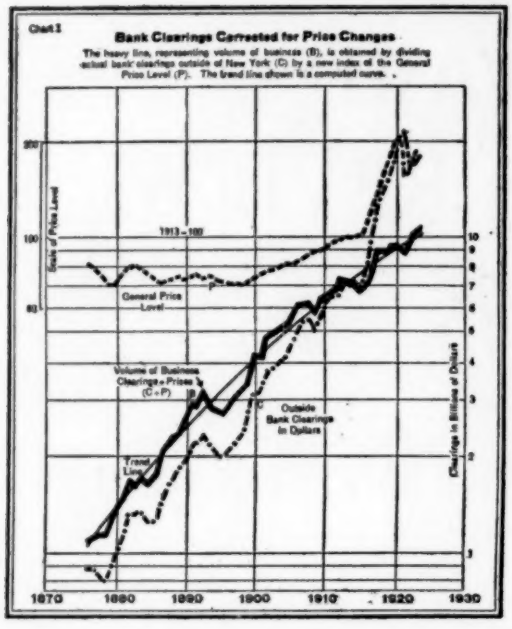
[3] King, W. I., *"Is Production Keeping Pace with Population?"* Bankers Statistics Corporation, August 24, 1920.

[4] *American Economic Review*, March, 1921, p. 57.

[5] Day, E. E., "An Index of the Physical Volume of Production," *Review of Economic Statistics*, January, 1921, p. 19.

[6] *Proceedings of the American Economic Association*, March, 1921, p. 75.

series in percentages of its normal and able normal point for the current



and downs of trade which, following Professor Mitchell, we have come to call the business cycle.

For a long time prior to the war, bank clearings, and especially clearings outside of New York City, were considered about the best index of general business which we possessed, and valuable studies of these and allied subjects have been made by Persons, Mitchell, and others; but not, so far as the writer knows, attempting to establish exact quantitative relationships or measures of the normal rate of growth. And even these lost all meaning or relationship with the enormous rise and later fall of prices in and after the war.

Business failures, pig-iron production, and some similar data have been likewise employed as measures of business variations, notably in the recent studies of Colonel Ayres, previous studies of Kemmerer, Persons, and others. But the available material, in monthly data, and especially for over any considerable period, is singularly scant, even for a country which has outrun every other in the collection of statistical information.

What was lacking was any definite or decisive proof that any of these series could be regarded as a positive measure of business fluctuations, or of their degree of reliability. But in and since the war, really beginning before the war, there has come a notable expansion in the reporting of business data, so that in the last five years especially, we have become possessed of such a variety and wealth of material as is to be found in no other country. The showing made by the variety of indexes in the *Survey of Current Business,* as it has been developed in the Department of Commerce under the inspiration of Secretary Hoover, is truly imposing.

Especially valuable contributions towards this end were the reports as to retail and wholesale trade, and the weekly reporting of bank debits and bank conditions developed by the Federal Reserve Board in its Division of Analysis and Research under the leadership of Dr. H. Parker Willis. And outside of production figures in many lines we now have measures of such varied activities as advertising, new life insurance written, telephone and telegraph service, amusements, speculation, and much else.

In the belief that with all this mass of new material it would now be feasible to combine this into such a comprehensive sampling of industrial and business activity as has never before been possible, we undertook, a year ago, to make such a composite index in terms of a common denominator.[7] This meant the measurement of each of the

[7] For a full description see *Journal of the American Statistical Association,* December, 1923, p. 949: "A New Index of the Volume of Trade."

series in percentages of its normal and accustomed rate of growth. It had been shown, notably by Professor F. R. Macaulay, that practically all the long-range industrial series which we possess, such as railway traffic, production in numerous lines, postal receipts, the number of patents issued, and many similar things, show, when plotted upon logarithmic or so-called ratio paper, quite even and characteristic rates of growth; it is almost invariably a decrescent rate of growth, so that in almost any long-time series the characteristic picture is a parabolic curve, never or rarely passing its apex. Investigation of the available material revealed that this showing was almost universal where the data were of sufficient extent, leaving the clear inference that practically all forms of industrial and business activity would, if we possessed a sufficient range of information, present much the same kind of picture.

Now, if it be true that a characteristic and accustomed rate of growth is thus a nearly universal fact, so far as our knowledge extends, it follows that, where we possess the data, from these we may develop trend lines, or lines of normal growth and normal expectancy, not, perhaps, for any far distant date in the future, but at least for the immediate present. And there is no need to do more. To describe, for example, railway traffic, or coal production, or postal receipts, or anything else, for the current month, in terms of percentages of this normal expectancy, we have no need to know what any of these will be 5, 10, or 20 years hence, although actually where we have sufficiently long-range material a very shrewd guess may be made. But for the present all we need to know is what has been the rate of growth in the past, and to establish from this what would be the probable normal point for the current months, due allowance being made, wherever possible, for the usual seasonal variations.

I am here speaking, of course, especially of data that are in quantitative terms, of bushels, and barrels, and bales, or of fixed or nearly fixed dollar values or rates, such as, for example, postal receipts. But it happens that by far the most valuable part of the new material which has been made available within the last five years and more, and likewise much of the old, was expressed in dollar values, whose quantitative or volumetric relationships were, of course, so rudely upset by the violent upheaval of prices in war time and after. Such were, as noted, the figures for bank clearings, and likewise for building permits, exports and imports, and, most notable for the new data, all the extremely valuable information as to wholesale and retail trade, new life insurance written, and the like. What to do with all these "dollar values" was the chief problem, and, as it developed, a great difficulty. The rest was relatively easy.

The solution of the difficulty lay simply in patient investigation of the average changes in price levels in each of the different reporting lines, that is, for retail trade, for wholesale trade, for chain stores and chain groceries and mail-order houses, and the like, and, most vital of all, for the average of payments which enter into the vast volume of bank clearings, or, as we now say, bank debits.

But for this we already had a number of excellent models. For the correction of the highly distorted figures for building permits, there were, for example, reliable indexes of building wages and the cost of building materials; and these had been combined

chart on page 6 portrays. A cursory When outside debits were thus cor-

into a number of indexes of average construction costs, by the Aberthaw Company, the American Telephone and Telegraph Company, by Dr. Burgess, Colonel Ayres, and others. Again, it had been found by the A. T. and T. that a serviceable index of railway traffic by months could be worked out from reported railway earnings. And we had found that when the reported figures for our export trade were deflated by an index of export prices, the results came remarkably close to very careful quantitative estimates, so far as they were available, compiled by Dr. Berridge for the Harvard Committee.

It might be added that similar methods had long been a standard procedure in the computation of so-called "real" wages, that is, by dividing actual wages by an index of the average cost of living.

Beyond all this we were fortunate in obtaining for chain grocery sales an actual index of average sales prices, month by month, from the largest of these organizations. In the case of computing quantity relations from grain and cotton futures, it was very easy to average grain and cotton prices for each month and divide these prices into the reported excise tax figures. From all these broad bases it was not an impossible undertaking to carry through similar computations for wholesale and retail trade, and several others.

But for the most important item of all, that of bank debits, or bank clearings, we had to deal with a vast composite of payments by check, reaching a total for the entire country for last year in excess of 550 billions of dollars. How to turn the prodigious totals of the last few years into quantitative relations with the totals of pre-war years was a formidable task. It had long been the custom to separate New York clearings, heavily weighted with financial transactions, interest payments, and, as it was long supposed, a large proportion of purely speculative transfers, from the rest of the country. But the course even of clearings outside of New York seemed bizarre enough, as the

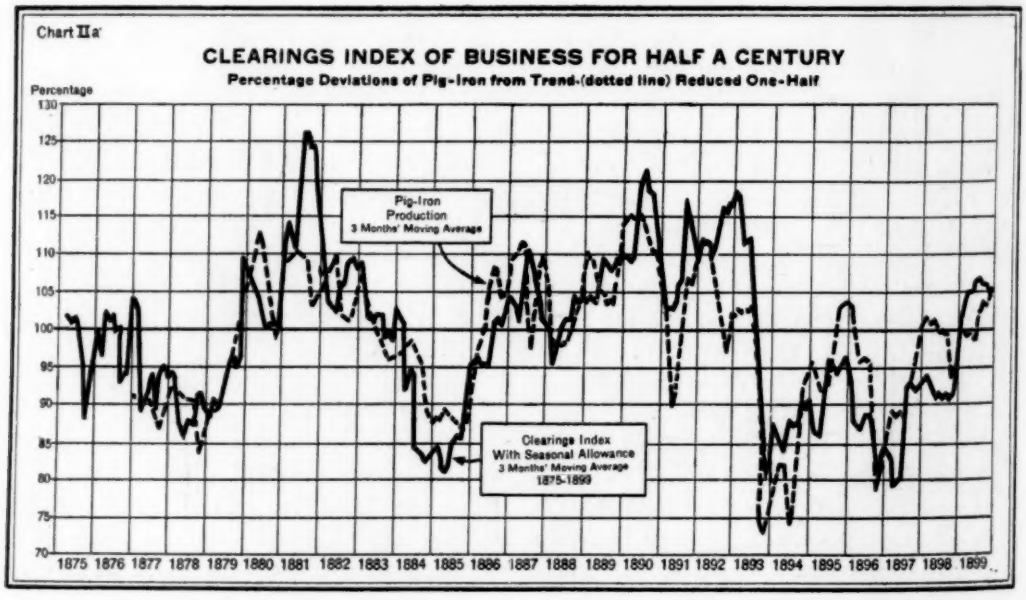


chart on page 6 portrays. A cursory test of dividing through by an index of wholesale prices yielded absurd results.

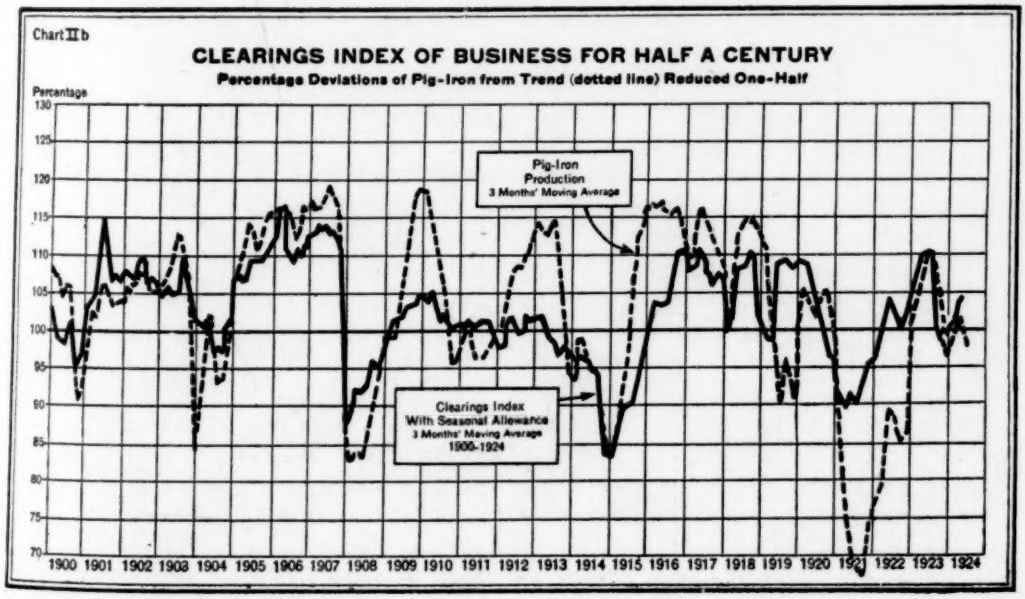
This was not, however, so true for the slow-moving averages of prices in pre-war years. If the reported clearings outside of New York for the 30 years prior to the war were so corrected, the result was a quite remarkably consistent line of growth. Prompted by this, and the known wide dispersion of various types of prices and payments, as wages, rents, and retail prices in the price upheavals of war time, we undertook the compilation of a new index of the average of such payments or, as it might be termed, of the "general price level."[8]

Since the data as to the composition of bank debits, by classes, are almost wholly lacking, we made up an empiric index, giving equal weights to commodity prices at wholesale, to a composite of wages, to the cost of living, and then one-third of this weight to stock prices.

[8] *Journal of the American Statistical Association*, June, 1924, p. 189.

When outside debits were thus corrected, the result was to continue in a quite remarkable way the general trend of pre-war years, and likewise to produce a line whose deviations from this general trend coincided quite closely with our composite index of the "volume of trade." Since in this latter composite, outside debits had been given a weight of but 8%, it was evident that this congruence was not the result of any preponderance of this one element over the rest.

Making use in this manner of the variations in our index of the volume of trade as a standard, or test, it was then not difficult, by means of the method of partial correlation, so to reweight the different components that this correspondence became practically coincidence. It was found that stock prices did not form a satisfactory element, the weight for wholesale prices was reduced to 20%, that for the composite of wages and that for the elements of the cost of living were raised to 35% each, and a new index of rents



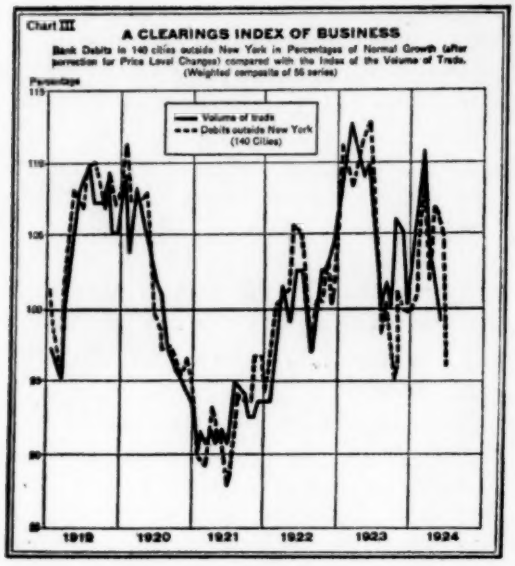


Chart III
A CLEARINGS INDEX OF BUSINESS
Bank Debits in 140 cities outside New York in Percentages of Normal Growth (after correction for Price Level Changes) compared with the Index of the Volume of Trade.
(Weighted composite of 56 series)
Percentage
Volume of trade
Debits outside New York (140 Cities)
1919
1920
1921
1922
1923
1924

added, to somewhat slow down the movement. Made up in this way our corrected index of bank debits became, for these five years, a practical replica of our larger composite index of trade, as is revealed in Chart III.

Now, if all this could be done for clearings, or debits, in a period of tumultuous price changes, such as in the war period and after, it was clearly still easier to pursue this method backward as far as clearings were available. The less satisfactory state of the data for a composite index of the general level of prices prior to the war was more than compensated by the slowness of the price changes. This new index of general prices was, therefore, calculated back to 1875, the earliest year for which bank clearings outside of New York were available. The course of this new index, together with outside clearings as reported and as corrected by this index, is depicted in Chart I. Through the corrected line has been run a calculated trend line, or line of growth, and in the computation of the deviations the point for each month on this normal line of growth has been taken as 100, and the deviations measured in percentages of these points. Thus, if, for example, adjusted clearings for January 1, 1919, were 9,220 millions, and the point for this month on the line of trend was 8,716 millions, the resulting index corrected for the usual seasonal changes would be 106%.

In other words, as the base, or norm, of our 50-year measures we have taken the variations depicted in our index of the volume of trade for the years 1919-1923. A composite index of the various types of prices entering into bank clearings, by the use of which the variations of clearings become a measure of business changes for these five years identical with our index of trade, is accepted as a standard method, and with this method a new index of the average change in all types of prices is compiled back to 1875; and by this means bank clearings for this 50-year period are corrected to yield a quantitative measure of trade. To use an engineering simile, our composite index of the volume of trade, as yet available for five years only, is made the base or anchor with which to project backwards an arm of a cantilever bridge. It is obvious that the strength of the bridge depends upon the strength of the base and the weighting of the materials for the arm.

The variations of this index, adjusted for the usual seasonal changes and smoothed by the use of a three months' moving average to iron out occasional erratic movements, are depicted in Charts IIa and IIb. Its most striking characteristic, perhaps, is that of an oscillation which is steadily damping down, and apparently shortening in period. The general picture of the earlier half is that of broad oscillations rather widely spaced, and of the second half a much reduced wave movement

with correspondingly shorter periods of time. How far may we accept this as a definite result?

Aside from our index of the volume of trade, we have for some years at the Federal Reserve Bank of New York made computations of the variations in rates of turnover of bank deposits; and when this material was available for five years it was possible to construct from these variations, in terms of deviations from a simple average of the five years, a second index of "business activity" which, with some notable exceptions, corresponded in a quite remarkable way with the much broader sampling of, and therefore in all probability much more reliable, index of trade.[9] We have latterly been able to carry back these same computations for the same 50-year period as our "clearings index," which has been described above. The result is a corroboration of the clearings index of about the same degree as the agreement of our volume of trade index with the turnover of bank deposits in the years from 1919 to 1923; that is to say, the time movements and the percentages of deviation are quite generally the same, and in a broad way the pictures much alike.

It may be said, of course, that the two measures relate to much the same sort of data, but this is only superficially the fact. In the one case, bank clearings have been corrected for wide changes in the price levels, and to such an effect that in the war period, at least, there is little resemblance between the original and adjusted figures. In the case of turnover of bank deposits there is no such correction. It is simply the ratio between the amount of checks drawn against the average deposits for a given month, and the index itself; a measure of the deviations in these rates of turnover from a moving average.

And if we ask for still further corroboration, we are face to face with the fact that we have little other available monthly data covering so long a period. We have business failures by months, but these are notoriously a laggard behind the general price movement, especially in and after crises. We have some figures of production, but almost the only representative series of these is for pig iron; and pig-iron production, as we know definitely from comparison with our index of the volume of trade, is in no sense a reliable index or "barometer" of business. But in view of the widely prevalent tradition that pig iron is such a barometer, it was of interest to make comparison of this with the new clearings index. This comparison is presented in a second line in the diagram, for which the scale of variations of pig-iron production from this normal rate of growth is cut in half so as more nearly to correspond with those of the clearings index.

But even here it will be seen that in spite of many erratic movements which quite destroy its value as a *measure* of business variation, in general the correlation of the pig-iron index with the new clearings index is fairly high. It is rather higher in the earlier half than in the latter half. In the latter half there are periods when pig-iron production was almost completely unrepresentative of the general movement of business. In the earlier half these outstanding discrepancies were less frequent; and it was doubtless in this period, and from the fact that pig iron was then practically the only quantitative measure of industry available, that it came to enjoy the reputation that is still preserved in many minds.

[9] *Journal of the American Statistical Association*, March, 1924, p. 36: "A New Index of Business Activity."

THE RELATION OF A PUBLIC UTILITY TO THE BUSINESS CYCLE

By HOMER B. VANDERBLUE AND WILLIAM L. CRUM

II. Kilowatt Hours Sold

PART I of this discussion examined and interpreted the month-to-month fluctuations in the gross revenue of the Public Service Electric Company.[1] This company, a subsidiary of the Public Service Corporation of New Jersey, furnishes electricity to important industrial sections of New Jersey. The conclusions of Part I were that the earnings of this company are influenced (1) by a highly uniform seasonal movement, (2) by a cyclical movement of only moderate intensity, and (3) by a strong upward trend. The fact that the cyclical movement has only moderate intensity, while the trend is steadily and sharply upward, led to the further conclusion that the trend rather than possible changes in general business conditions should receive chief consideration in any long-run appraisal of company problems, such as the financing of capital expenditures. More precise quantitative measurement of some of the important elements entering into such requirements as recur each year at the same season, however, calls for a measure of the normal seasonal change with which the apparent requirements can be compared.

Gross earnings for a company doing a varied business are composite figures. In the case of the Public Service Electric Company gross earnings are the sum of earnings from power sales and lighting sales. On this account gross earnings are subject to an important limitation, since detailed differences between the two components are obliterated. The executive who is seeking to establish statistical standards for control purposes frequently needs not a composite picture, however useful that may be for the determination of general policies, but an analysis which directs attention to details.

The present discussion serves to illustrate the importance of such analysis, since the figures examined—those for kilowatt hours sold for power and for lighting—show results which are in many respects quite different. This is not surprising; for on *a priori* grounds it might fairly be assumed that power sales, though affected by seasonal changes in industrial activity peculiar to the district served, would be affected rather more by changes in general business conditions. Lighting sales, on the other hand, would be expected to reflect closely changes in consumption due to the length of the day, which varies with the seasons; but they would be much less subject to business conditions, since there is a large volume of lighting demand for residences and streets,

[1] HARVARD BUSINESS REVIEW, vol. 2, pp. 409-420. In Part I the charts which appear as Ia and Ib on pages 410-411 should have appeared under the caption "Revenue from electric sales, corrected for trend by expressing actual data as relatives to normal trend" as Charts IIa and IIb on pages 412-413. The charts which appeared as Charts IIa and IIb, showing the actual data with lines of trend, should have appeared as Charts Ia and Ib as indicated by the captions and the text on pages 416-417 under the heading "The Measurement of Trend."

Chart 1

PUBLIC SERVICE ELECTRIC COMPANY

Curves of actual data, for kilowatt hours sold for lighting and for power plotted on a logarithmic scale, with lines of normal trend for the different sections of the interval, 1910-1923

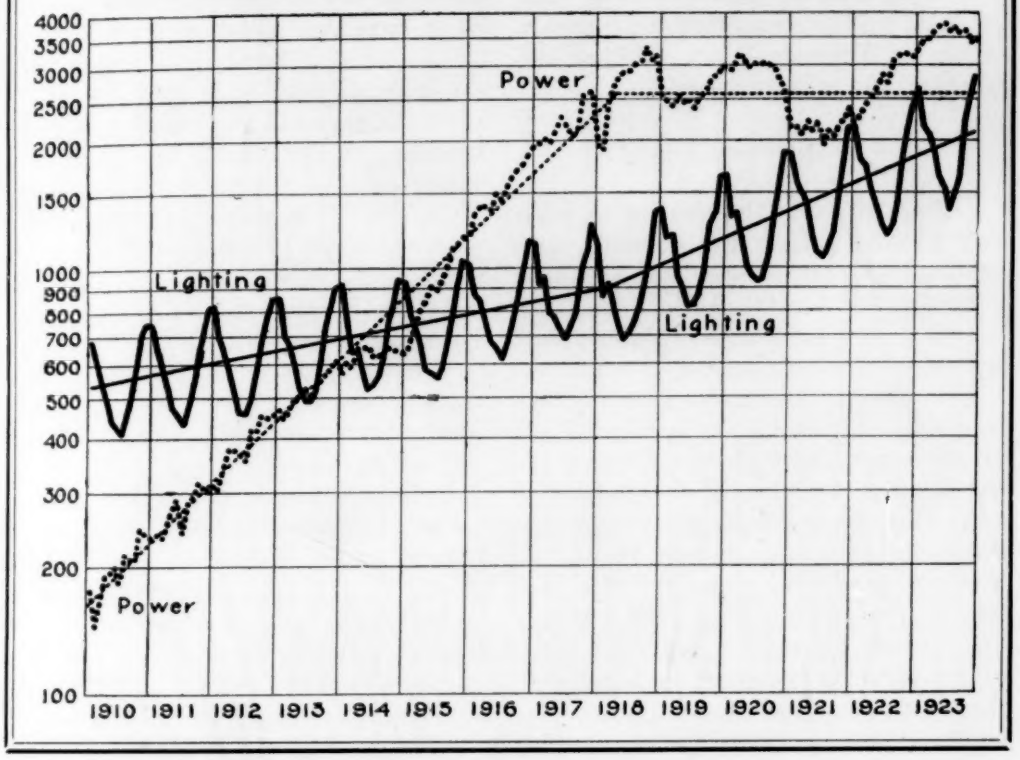


TABLE I. PUBLIC SERVICE ELECTRIC COMPANY. KILOWATT HOURS SOLD FOR LIGHTING

(Unit: 10,000 K. W. H.)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1910	687	608	545	493	436	424	402	447	508	594	704	749
1911	748	655	576	523	467	453	429	476	545	643	741	814
1912	824	685	640	581	521	459	458	497	581	696	779	859
1913	869	701	669	602	528	492	492	521	608	740	814	905
1914	921	766	640	646	568	518	535	561	631	762	831	946
1915	929	779	714	651	583	567	557	588	680	790	913	1035
1916	1010	875	844	737	676	656	611	676	731	870	1002	1158
1917	1137	908	954	789	773	717	689	733	789	1005	1085	1231
1918	1117	858	907	819	738	692	711	752	828	965	1081	1360
1919	1378	1167	1189	953	903	824	831	871	982	1242	1333	1637
1920	1655	1319	1345	1167	1000	957	931	946	1066	1316	1533	1867
1921	1858	1562	1480	1410	1172	1087	1055	1080	1208	1528	1834	2144
1922	2144	1802	1744	1541	1351	1254	1178	1260	1447	1805	2110	2406
1923	2621	2154	2077	1901	1634	1508	1349	1498	1613	2232	2517	2883

which goes on regardless of the state of general business. To test these two assumptions, and to measure the relative rate of growth of the demand for these two distinct departments of the business, we have analyzed the monthly figures of kilowatt hours sold by the company for each purpose.

Lighting

Figures showing the number of kilowatt hours sold by the company for lighting and for power are available monthly, 1910-1923. The data for "lighting" are presented in Table I and in the full line of Chart I.

Examination of the chart reveals the existence of a moderate upward trend of the series throughout the entire interval, 1910-1923. Closer study suggests that the trend is at a fairly constant rate, 1910-1918, and thereafter becomes somewhat steeper. The fact that a straight line fits fairly well for each section, 1910-1918 and 1918-1923, of the curve in the chart indicates that the trend in each section of the interval is at a constant percentage rate. This is another way of saying that Chart I is plotted on a *logarithmic scale.* As was explained in Part I, the fitting of a *straight line* to a logarithmic chart is equivalent to fitting a *compound interest curve* to the actual data, and such a curve rises at a constant rate.[2]

Trends were fitted to each section of the interval 1910-1923 by methods exactly analogous to those used for "gross revenue" in Part I, and the results are summarized in the left-hand portion of Table II. The table emphasizes the sharp advance in trend after the war: the average annual rate of increase in the later section is more than twice that of the earlier section.

It is necessary to recall here the cautionary remarks made in Part I relative to the fitting of a trend to so short a time-interval as 1918-1923. The fitting of a line of trend by the method of least squares is ordinarily assumed to give a correct result if the interval is sufficiently long (usually 10 or more years is "sufficient"). In such a long interval any errors in the fit, due to cyclical fluctuations, tend to cancel one another. As the method is applied to shorter and

[2] *See* discussion in Part I, page 416 of the July REVIEW, and especially footnote 2 of that article.

TABLE II. DESCRIPTION OF THE "NORMAL FOR EACH MONTH" FOR EACH OF THE TWO SECTIONS OF THE INTERVAL 1910-23 FOR WHICH TRENDS WERE DETERMINED

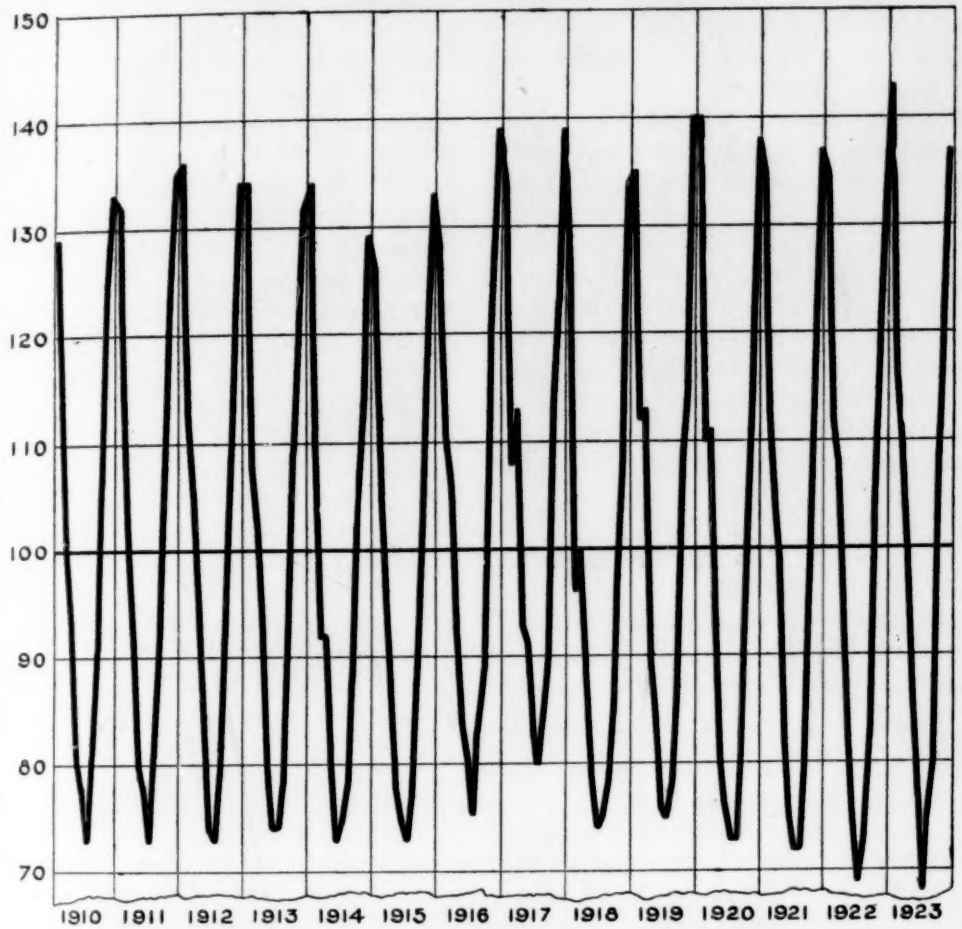
	Kilowatt Hours Sold for Lighting		Kilowatt Hours Sold for Power	
Section of interval used in determining trend.	1910-18	1919-23	1910-18	1919-21*
Average annual percentage increase.	6.7	15.7	39.9	0.0*
Normal for the month at the beginning of the section.†	532 Jan. 15, 1910	906 Mar. 15, 1918	163 Jan. 15, 1910	2562 Apr. 15, 1918
Normal for the month at the end of the section.†	897 Feb. 15, 1918	2099 Dec. 15, 1923	2526 Mar. 15, 1918	2562 Dec. 15, 1923

* Trend taken as the monthly average for 1919-21, for the second interval for the "power" series.
† Normals expressed in units of 10,000 K. W. H.

Chart II

PUBLIC SERVICE ELECTRIC COMPANY

Kilowatt hours sold for lighting, corrected for trend by expressing the actual items as percentages of the normal



shorter intervals, however, this cancelation becomes ever less effective; and, if the interval is too short, the consequent errors in the fit become so great that the method is worthless. Nevertheless, if it is clearly apparent from the chart of actual items that the cyclical movements in the series are relatively slight, a much shorter interval will be sufficient than if the cyclical swings are quite heavy. Chart I shows that the cyclical fluctuations in "lighting" are very slight, and hence a trend can be fitted to that series for the years 1918-1923. On the other hand, as we shall note below, the "power" curve of Chart I is subject to a well-marked cyclical movement; and it will be necessary to forego correction of that series for trend in the interval 1918-1923.

As soon as the trends have been determined for the two sections, the *or-*

dinates of trend are found for each month of the entire interval.[3] These ordinates are the *normals* for the various months: each ordinate is the number of kilowatt hours which would be sold for lighting in the particular month if there were no seasonal variation and no cyclical fluctuation.

In fact, however, the sales for a particular month seldom correspond with the normal (due to trend alone) for that month. The deviation of the actual from the normal is due to seasonal or cyclical influences or both. In order to study the effect of these influences on the series it is necessary to *eliminate* the trend. This is accomplished by dividing the actual item in each month by the corresponding normal and expressing the result as a percentage. Thus, for January, 1910, 687 divided by 532 yields 129%. The results, for all the months of the entire interval, are shown in Table III and Chart II.

In addition to revealing the nature of the trend in the series, examination of Chart I gives a first impression of the form and extent of the seasonal variation. Like evidence also appears in Chart II. The actual determination of the indexes of seasonal variation rests upon the use of the *ratio-to-ordinate* method, as was the case for "gross revenue." The resulting seasonal indexes for the sub-intervals 1910-1917 and 1918-1923 are shown in Table IV. The reasons for deriving two sets of indexes are as follows. The *multiple frequency table,* Chart III, of the percentages in Table III suggests that the monthly percentage groups for the years after the war tend to concentrate about slightly different points in the several monthly columns than the corresponding groups for the years 1910-1917. This empirical evidence might not alone be regarded as sufficient reason for concluding that the seasonal movement underwent a change in the later years. The fact is, however, that a non-statistical reason probably accounts for this change: the establishment of the *daylight saving custom.* Daylight saving might be expected to result in a lowering of the summer consumption of electric light relative to the winter consumption.

[3] This operation is described in some detail on page 417 of the July REVIEW.

TABLE III. PUBLIC SERVICE ELECTRIC COMPANY. KILOWATT HOURS SOLD FOR LIGHTING, EXPRESSED AS PERCENTAGES OF THE NORMAL FOR EACH MONTH

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1910	129	114	101	93	80	78	73	81	91	106	125	133
1911	132	115	100	91	80	78	73	81	92	108	124	135
1912	136	113	105	94	84	74	73	79	92	109	122	134
1913	134	108	102	92	80	74	74	78	90	109	119	132
1914	134	111	92	92	81	73	75	78	88	105	114	129
1915	126	105	96	87	78	75	73	77	88	102	118	133
1916	129	111	106	93	84	81	75	83	89	106	121	139
1917	136	108	113	93	91	83	80	84	90	114	123	139
1918	125	96	100	89	79	74	75	78	85	98	108	134
1919	135	112	113	90	84	76	75	78	87	109	115	140
1920	140	110	111	95	80	76	73	73	82	99	115	138
1921	135	113	105	99	82	75	72	72	80	100	118	137
1922	135	112	108	94	81	74	69	73	83	102	118	133
1923	143	116	110	100	85	77	68	75	80	109	121	137

This is precisely what the numerical results of Table IV show.

The elimination of seasonal variation from the items of Table III involves subtracting from each item of Table III the corresponding seasonal index of Table IV and adding 100 to the resulting difference. These operations lead to the *adjusted relatives* presented in Table V. The variations among the items of Table V are due to cyclical causes, since the effects of trend and the seasonal influences have been eliminated.

Power

Table VI and the broken line of Chart I show the data for "power." The most striking features of the curve are the very strong upward trend 1910-1918, and the sharp break in the trend at the close of the war. The right-hand portion of Table II exhibits the essential facts about the trends as used in the analysis. The monthly normals from January, 1910, to March, 1918, are determined by the same method as that used for "gross revenue" and "lighting." A straight line was fitted to the logarithmic chart 1910-1918, and this is again equivalent to fitting a compound interest curve to the actual data.

TABLE IV. INDEXES OF SEASONAL VARIATION FOR THE TWO INTERVALS, FOR KILOWATT HOURS SOLD FOR LIGHTING

Months	1910-17	1918-23
January	132	137
February	111	112
March	102	109
April	93	95
May	81	82
June	76	76
July	74	73
August	80	75
September	90	83
October	107	103
November	121	117
December	134	137

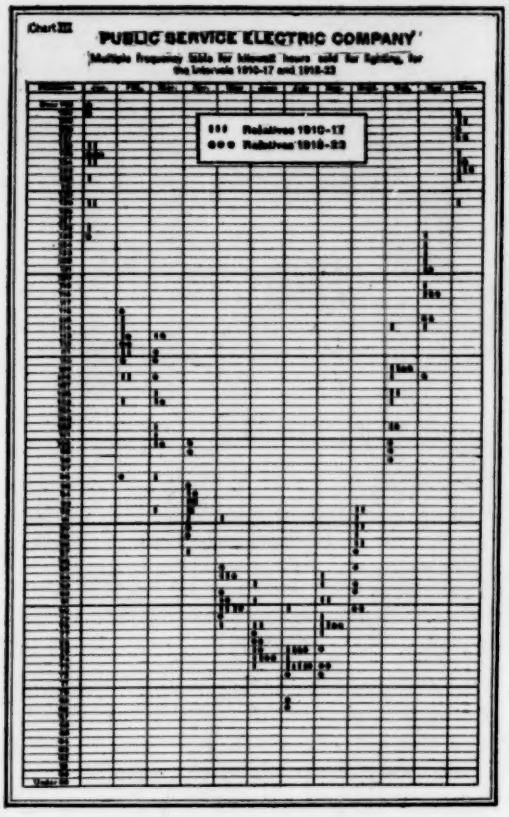


Chart III
PUBLIC SERVICE ELECTRIC COMPANY
Multiple frequency bills for kilowatt hours sold for lighting, for the intervals 1910-17 and 1918-23
Relatives 1910-17
Relatives 1918-23

In the years since the war, however, trend cannot satisfactorily be determined by this method. Unlike the other series examined, the "power" series has a very considerable cyclical movement, as is evidenced particularly by the heavy dips of 1919 and 1921. For so short an interval as 1918-1923, such a series should not be corrected for trend by the least-squares method. Use of this method would yield a result having an illusory appearance of precision. As a matter of fact, such a correction would depend upon cyclical influences as well as upon actual trend, and the results would therefore be misleading. Hence a *numerical* correction for trend should be postponed in such a series until more time has elapsed and a surer conclusion can be reached. A *qualitative* estimate

TABLE V. PUBLIC SERVICE ELECTRIC COMPANY. KILOWATT HOURS SOLD FOR LIGHTING, EXPRESSED AS PERCENTAGES OF THE NORMAL FOR EACH MONTH, AND CORRECTED FOR SEASONAL VARIATION

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1910	97	103	99	100	99	102	99	101	101	99	104	99
1911	100	104	98	98	99	102	99	101	102	101	103	101
1912	104	102	103	101	103	98	99	99	102	102	101	100
1913	102	97	100	99	99	98	100	102	100	102	98	98
1914	102	100	90	99	100	97	101	98	98	98	93	95
1915	94	94	94	94	97	99	99	97	98	95	97	99
1916	97	100	104	100	103	105	101	103	99	99	100	105
1917	104	97	111	100	110	107	106	104	100	107	102	105
1918	88	84	91	94	97	98	102	103	102	95	91	97
1919	98	100	104	95	102	100	102	103	104	106	98	103
1920	103	98	102	100	98	100	100	98	99	96	98	101
1921	98	101	96	104	100	99	99	97	97	97	101	100
1922	98	100	99	99	99	98	96	98	100	99	101	96
1923	106	104	101	105	103	101	95	100	97	106	104	100

of trend can be made at once: it is quite safe to assume that the trend is upward, but at a very moderate rate compared with that for 1910-1918. This estimate cannot be used in the remaining numerical analysis, but must be borne in mind in the interpretation of the results.

In the absence of a satisfactory determination of trend, a tentative *normal* must be assumed for the months since the war. For this purpose we have taken the monthly average for the three years which make up the post-war business cycle, 1919-1921.

With the normals as thus determined for the two sub-intervals 1910-1918 and 1918-1923, the percentages given in Table VII are calculated from the items of Table VI, just as Table III is derived from Table I.

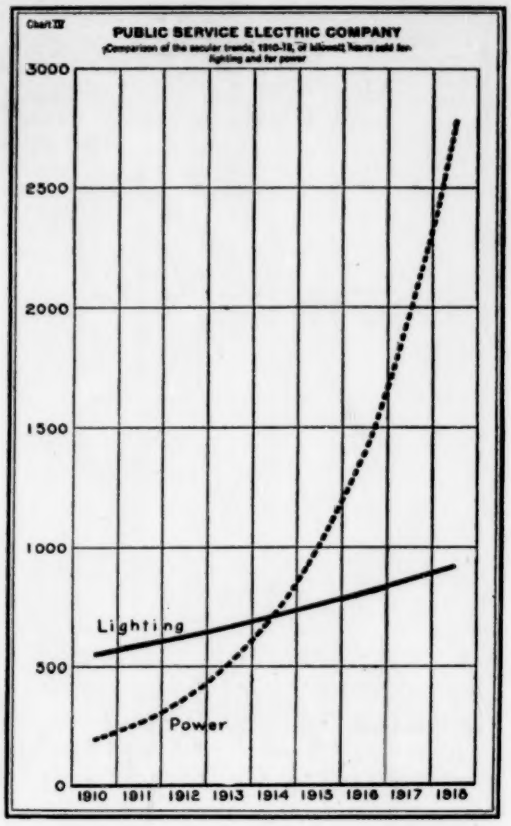
Although careful study of Chart I may disclose slight traces of a seasonal

TABLE VI. PUBLIC SERVICE ELECTRIC COMPANY. KILOWATT HOURS SOLD FOR POWER
(*Unit: 10,000 K. W. H.*)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1910	177	143	166	189	192	200	181	214	207	207	246	238
1911	234	237	234	246	269	287	239	283	291	316	307	301
1912	312	303	337	378	375	372	355	417	415	454	446	452
1913	463	441	470	498	501	526	508	526	553	571	588	608
1914	575	607	589	662	655	662	625	627	632	652	649	647
1915	630	690	749	815	849	910	892	942	1010	1112	1136	1187
1916	1191	1355	1403	1394	1377	1514	1430	1556	1655	1715	1773	1879
1917	1966	1958	2030	1971	2093	2279	2150	2053	2136	2542	2581	2582
1918	1913	1887	2429	2700	2852	2906	2916	3047	3066	3271	3066	3126
1919	2535	2447	2386	2553	2446	2474	2373	2535	2601	2766	2840	2999
1920	2935	2932	3191	3104	2956	3029	3001	3063	2993	2928	2742	2608
1921	2136	2153	2053	2225	2094	2240	1935	2100	2052	2198	2228	2373
1922	2177	2298	2424	2548	2677	2847	2728	3086	3110	3180	3166	3164
1923	3273	3444	3471	3656	3725	3752	3585	3694	3553	3629	3435	3480

variation, such movement is obviously unimportant relative to the cyclical swings and it may be neglected. The items of Table VII may therefore be regarded as showing the *cyclical fluctuations* for "power" in the same way that Table V reflects the cyclical movements for "lighting."

It is interesting to note the marked difference in the trends for "lighting" and for "power" in the years 1910-1918. This is shown in Chart I, and by the items *annual percentage increase* of Table II. Chart IV shows this difference in trend in a more striking manner. This figure compares the two actual curves of trend, plotted by locating the two ordinates of trend for the center of each year. Since this chart is on an arithmetic scale, the trends which appear as straight lines on the logarithmic scale of Chart I are here compound interest curves. The "power" curve starts at a lower point in 1910 than that for "lighting"; but, owing to its greater percentage rate of increase, the curve for "power" soon crosses the "lighting" curve and by 1918 rises to a much higher level.



Comparison with General Business

Indexes based upon economic and business data, especially when correction has been made for both secular trend and seasonal variation, may be compared with respect to two quite distinct characteristics: (1) the timing of any changes of direction, particularly when those changes mark the beginning of a decline into a period of depression or of an advance into a period of prosperity; and (2) the amplitude of the cyclical swings as measured by the differences in elevation between the peak of prosperity and the trough of depression.

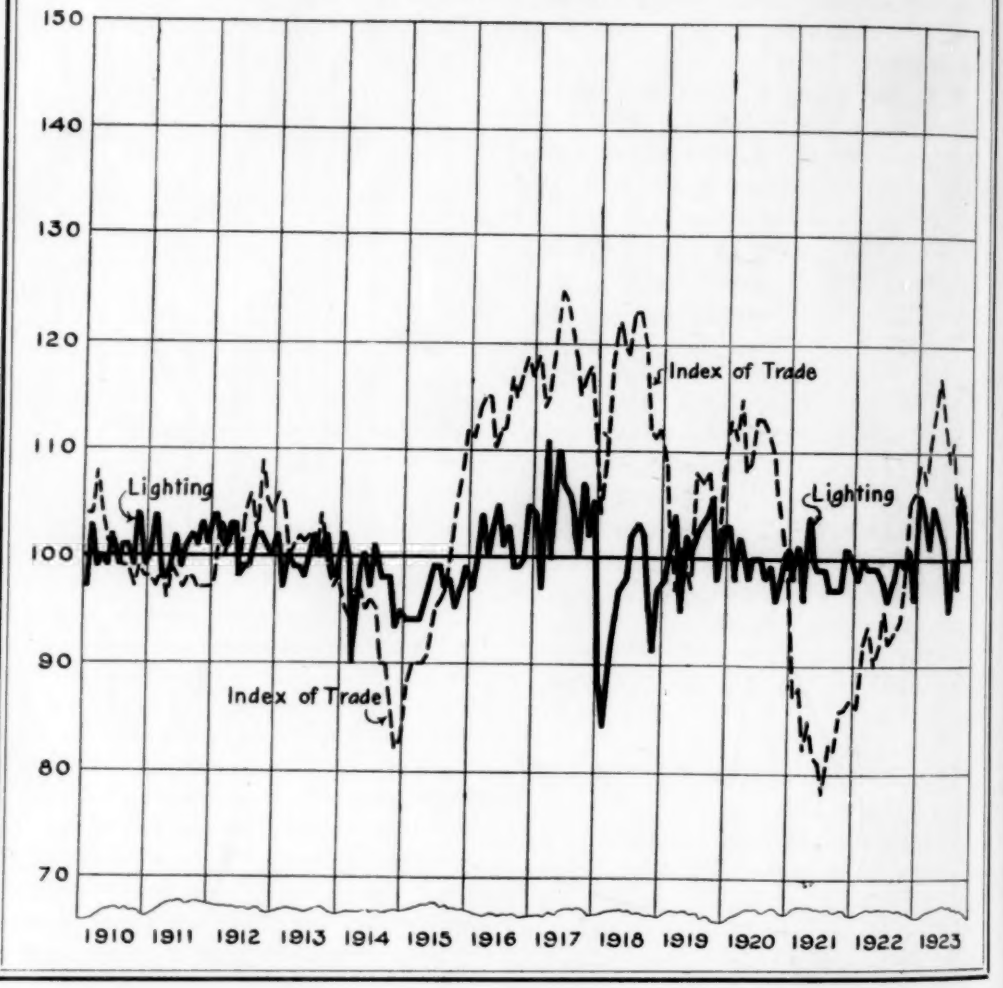
In Charts V and VI the cyclical fluctuations in kilowatt hours sold for lighting and for power are compared with corresponding movements in general business activity as measured by the Harvard Index of Trade. This is the index of general business conditions with which the curve for gross earnings was compared in Part I of this discussion.

So far as the timing of the major turning points is concerned, the curves for both lighting and power show a remarkably consistent relationship with the Index of Trade. There is a swing downward from a high point in the late fall of 1912 to the deep trough of the depression which, following the outbreak of the European War, lasted until

Chart V

PUBLIC SERVICE ELECTRIC COMPANY

Cyclical fluctuations in kilowatt hours sold for lighting, as shown by percentages of normal corrected for seasonal variation, compared with the Index of Trade of the Harvard Economic Service

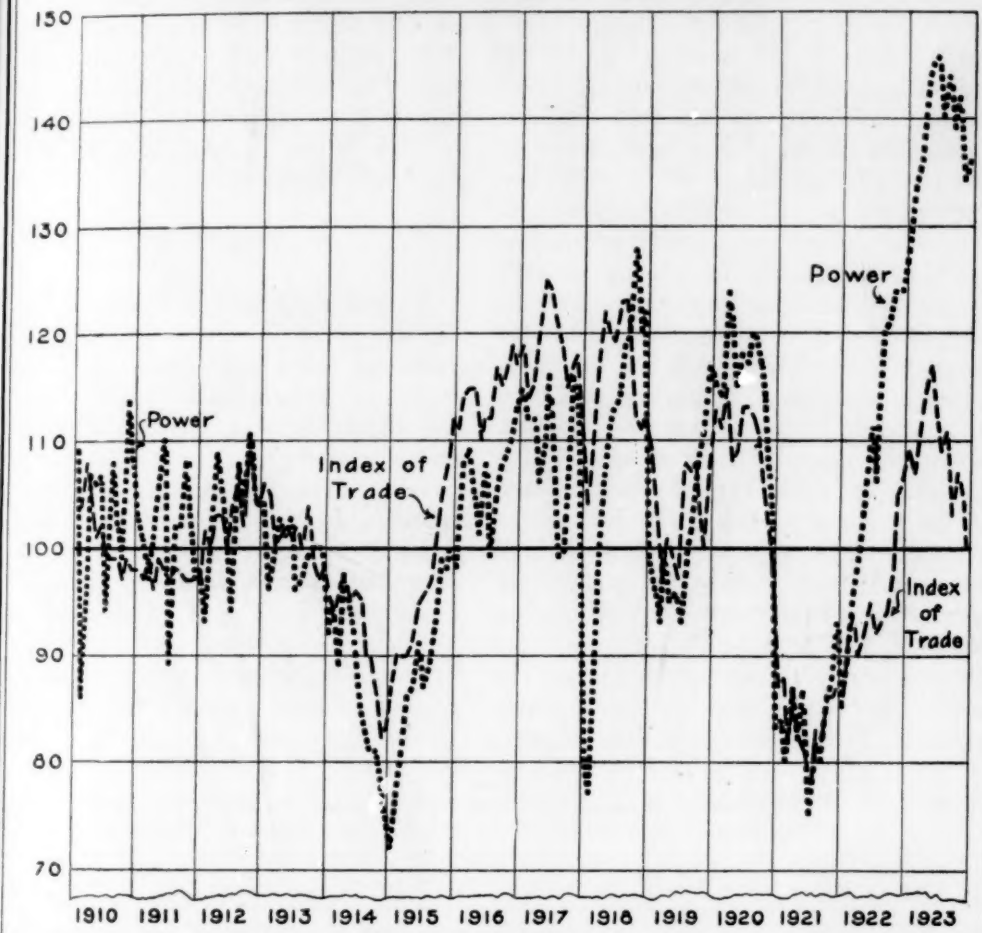


the stimulus of war orders caused a sharp advance of all three curves. From the high levels of 1917 there was a drop at the end of the year, which is attributable largely to the stalling of the transportation system. Once the railroad situation had been cleared up there was a sharp recovery in each curve. The curve for lighting did not recover to the level of 1917, but that for power rose to even greater heights than before the recession. Following the armistice there was a depression during the first half of 1919, a sharp advance until the early months of 1920, and then the drop into the severe depression of 1921. Recovery set in at the middle of the year. By late 1922 and the early

Chart VI

PUBLIC SERVICE ELECTRIC COMPANY

Cyclical fluctuations in kilowatt hours sold for power, as shown by percentages of normal, compared with the Index of Trade of the Harvard Economic Service



months of 1923, the indexes were again at high levels. The business recession of the summer of 1923 was followed, toward the end of the year, by moderate recovery.

While both curves correspond closely with the Trade Index, the amplitude of the cyclical swings is much greater in the case of power than in that of lighting. This amounts to stating that the lighting business goes on, little affected by changes in general business conditions, while the amount of current sold for power is severely affected. The stability of the demand for lighting in the face of changing business conditions thus accounts for the fact that such cyclical fluctuations as exist in the revenues, while conforming to changes in general business, are relatively unim-

portant. This condition was discussed at some length in Part I.

For power sales the cyclical movement is, on the other hand, very important. The power index tends to fall lower and to rise higher than the Harvard Index of Trade. The distinctly higher level of the power index in 1923 is due, however, to the fact that no correction for trend has been made in the series for power since the war. Using the 1919-1921 monthly average as 100 is equivalent to assuming a sidewise trend, although, in fact, some growth element is present in the power series. As suggested above, a longer period must elapse before this trend can be measured statistically. Inspection of Chart I shows that the growth has been slight, however, especially when compared with the sharply upward trend which existed in the pre-war period. The end of the war found New Jersey industries well expanded; and, during the subsequent years, when only the normal peace-time demand has been operative, there has been a much slower expansion of the sales for power than in the pre-war period. With a longer period of years available it will be possible to make a statistical correction for trend and this may be expected to bring down the power index to levels approximating those of the Index of Trade, as was the case in the pre-war and war years. Such analysis would also furnish a basis for appraising more accurately than is now possible the probable extent to which further investment in plant will be necessary.

Conclusion

As was suggested in Part I, analyses similar to those which we have here made of the three series, which give a general picture of the operations of the Public Service Electric Company, could be made of various items of comparable data for different generating stations, or for different cities or industrial areas. The totals for kilowatt hours of current sold are themselves made up of individual items which, like the figures for power and for lighting, have their own individual seasonal variations, trends, and cyclical movements. It has been our purpose to indicate,

TABLE VII. PUBLIC SERVICE ELECTRIC COMPANY. KILOWATT HOURS SOLD FOR POWER, EXPRESSED AS PERCENTAGES OF THE NORMAL FOR EACH MONTH

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1910	109	86	96	107	106	107	94	108	102	99	114	108
1911	103	101	97	100	106	110	89	102	102	108	102	97
1912	98	93	100	109	105	102	94	108	104	111	106	104
1913	104	96	100	103	101	103	96	97	99	100	100	100
1914	92	95	89	98	94	92	85	83	81	81	79	76
1915	72	77	81	86	87	91	87	89	93	99	98	100
1916	98	108	109	105	101	108	99	105	108	109	110	113
1917	115	112	112	106	110	116	107	99	100	116	114	111
1918	80	77	96	105	111	113	114	119	120	128	120	122
1919	99	96	93	100	95	96	93	99	102	108	111	117
1920	115	114	124	121	115	118	117	120	117	114	107	102
1921	83	84	80	87	82	87	75	82	80	86	87	93
1922	85	90	95	99	104	111	106	120	121	124	124	124
1923	128	134	136	143	145	146	140	144	139	142	134	136

by some typical analyses, how the technical methods utilized by economists in the study of business cycles can be used by the managers of individual business enterprises in the amplification of their statistical records. Thus, the analysis here presented is merely an illustration of what may be done in even greater detail in the management of such a company.

AMERICAN BANKS AND AMERICAN FOREIGN TRADE

By JAMES P. WARBURG

IT is only during the past 10 years that American banks, using their own facilities and carrying on business in dollars, have entered actively the field of financing the business of the American merchant with foreign countries. While the movement had begun prior to 1914, it was really only through the passage of the Federal Reserve Act that the door was opened for Uncle Sam to enter the field as a world banker. It is true that his quick and phenomenal success in this new role was greatly aided by the conditions created by the war, which started in the very month the Federal Reserve System began its operations. While, as a consequence of the war, our trade with other countries assumed large proportions, the banking and credit facilities of the leading financial countries of Europe became crippled, so that American banks were called upon to render some of the indispensable services hitherto performed almost exclusively by foreign financial institutions.

Whether trade follows the flag, or whether the flag follows trade, is a question as much controverted as the eternal puzzle of which came first—the chicken or the egg. It is safe to say, however, that normally in the development of new fields the banker follows trade. Such, for instance, has been the gradual development of the system of commerce and banking of the great British Empire; and such also was the building up, until 1914, of the German structure of foreign banking and trade. With us this development has necessarily been more of a hothouse growth, fostered in the heat of abnormal conditions and then left to adjust itself, almost overnight, to the frigid temperature of a post-war wintry climate. It was inevitable, therefore, that many of the trees and shrubs, which we planted under glass, fertilized with war-time extravagance, and drove to the utmost limit of their growing capacity, should later shrivel up and die when left out in the open. It could scarcely be expected that in so short a period American bankers, untrained and without the tradition born of centuries of experience, should be able to accomplish in foreign fields what generations of effort had built up for European countries. When one considers that prior to the enactment of the Federal Reserve legislation in 1913-1914, no national bank was permitted to open foreign branches or to make dollar acceptances, it is indeed surprising how much of that which was built stands today. To those familiar with the acute difficulties into which many of the oldest foreign banks were thrown, as a consequence of the collapse of the war trade boom, the costly experience of American banks during that period is easily understood.

From the outset there were several schools of thought as regards the manner in which American banks should equip themselves to finance American foreign trade. One school believed in the theory of establishing foreign branches. Several large commercial banks, adhering to that theory, proceeded to establish their own branches

and agencies in all parts of the world; some of them with phenomenal speed. Others inclined towards building up a network of foreign correspondent banks. Others, disinclined to run the full risk of establishing branches of their own, or too small to make such a venture pay unless entering upon it in association with others, sought and secured from Congress an amendment to the Federal Reserve Act permitting national banks jointly to own foreign banking corporations, and the latter in turn were authorized to open branches in foreign lands wherever it seemed that there were American interests to serve. Several corporations of this type were formed by nation-wide groups of associated bankers. Congress furthermore authorized these corporations to hold stock in foreign banks, thus enabling them, where it seemed the wiser course, to establish intimate working relations by acquiring interests in existing foreign banks instead of setting up their own competitive branch organizations.

It is, perhaps, too soon to attempt to draw conclusions from our own experience—too soon, certainly, to state with any degree of authority that one school has proved itself right and the other wrong—but it may be possible to compare, in the light of what experience we have gained, the apparent advantages and disadvantages of each method. Before we endeavor to do this, however, it is necessary to consider briefly the functions which the American banker is called upon to perform in connection with foreign trade.

I

We must be clear at the outset that what we are concerned with here is commercial banking, that is, the financing of every-day trade and intercourse between countries, as opposed to what is commonly referred to as "international banking," in the sense of the general investment and finance business. In other words, we are dealing with the problem of commercial business between our country and the rest of the world, rather than with the permanent investment of our country abroad or of other countries here.

Primarily we are interested in three things: the financing of our imports, the financing of our exports, and the service that banks may render to travelers and to Americans operating in foreign countries. In facilitating the purchase of goods abroad by American manufacturers or merchants, the function of a commercial bank is to provide the means of obtaining information, making payment, or arranging for credit. The bank acts as the bridge connecting the foreign seller and the domestic buyer. It provides information not only about the general conditions abroad but also about particular articles and trades and the standing of would-be sellers. Next it must help its client, the importer, to obtain the funds necessary to make the required payment, by transferring dollars abroad, by procuring foreign currency, or by arranging to make payment here when or after the documents or goods arrive. Where the importer has sufficient cash of his own, the bank merely performs the service of making this cash available in other parts of the world and sees to it that payment is made only under the proper conditions. Where the importer desires to buy abroad on credit, the bank renders the additional service of arranging some means whereby he may gain a certain amount of time. This it usually accomplishes through the familiar operation of the commercial letter of credit, either sight or time, the details of

which scarcely need be discussed here.

In its relation with the exporter, the commercial bank likewise renders a threefold service in that it procures information, attends to the collection of receivables abroad, and, if necessary, makes advances against the collection of such items. It is in this field particularly that the greatest development in recent years has taken place.

During the last quarter of the nineteenth century, although America's exports were still largely confined to raw materials, the foundation of her phenomenal industrial development was laid. Under the stimulus of the war our plants grew in scope and number, and when the sudden incapacitation of Europe opened for us foreign markets heretofore served by her, we plunged headlong into the business of supplying the various and sundry needs of the world. It is not surprising that, when the war demand ended and Europe began her efforts to regain her lost markets, the casualty list among American exporters was long. Their losses in many cases were shared by the American banks many of which, in furnishing information, had shown themselves as lacking in judgment, knowledge, and experience as their customers. Moreover, American exporters shared their fate with exporting firms in neutral countries, which also had rushed into fields occupied by others before the war. But while the neutrals have since evacuated many of these new foreign markets, America has perfected her mass-production processes to such a degree that for certain manufactured articles, in addition to her agricultural and mineral staples, she has remained permanently in the field as an exporter of great importance.

In order to be able to compete and do his business with reasonable safety the American exporter must be able to secure reliable information from his bank. He wants to be kept up to date by it, not only as to the standing of each of his foreign customers but also as to the developments that take place in every country. Political changes, tariff reforms, fiscal conditions, the general business situation, labor troubles, and the condition of the foreign banks, all these are of vital interest to him; likewise, exchange fluctuations and international political complications which may loom on the horizon.

Having made up his mind to whom he will sell, and under what conditions, the exporter next looks to his bank to help him carry out his contracts and to see that his buyers live up to their undertakings. This again involves constant vigilance in a thousand different ways.

And, finally, the bank is called upon to help the exporter carry the burden of his sales abroad by making him advances against his shipments of goods. Here again it is not our purpose to discuss at length the workings of an export credit but only to point out that, whether goods are shipped on consignment, on open invoice, on sight draft, on time draft with documents delivered against payment, or against acceptance and trust receipt, it is always to his bank that the exporter looks for cooperation and advice, both in making the arrangement and in carrying it out.

There remains one other general category of services performed by the American foreign commercial banker, namely, a service to travelers abroad. The nature of this function is so familiar that it requires no further analysis. Nor is the service one which in itself can be considered as a primary banking element, being rather an incidental facility extended by banks in the hope of

attracting thereby other and more profitable business.

Such, then, are the general purposes for which American banks have entered the field of international business, some by establishing themselves in foreign countries, either directly or indirectly, and others through working agreements with foreign banks. What conclusions, if any, can we draw as to the relative merits of each?

II

The idea of organizing foreign branches has its origin in Europe and Canada. Those who favor this plan invariably point to the great British, Continental, and Canadian banks, which have gradually built up their network of branches throughout the world. They will tell you particularly how England and, to some extent, Germany and other Continental countries have gradually acquired control of the world's commerce by reason of their merchant marine and foreign banking systems. They will reason, and not incorrectly, that if experience has taught Europe the best way to do these things, the best way for us is to imitate Europe. And they will go on to show that the American merchant can hold his own in foreign fields only if he is given the same support of a merchant marine and an international banking system that his European competitor has at his disposal. All this is true; true also that the dollar cannot share honors with the pound sterling, if British banks dominate the world; and that it is more pleasant for the American traveler to be able to go to an American bank to cash his letter of credit than to have to do so at a foreign bank. All this is true, and yet the experience of the past few years does not altogether bear out the premise.

It may be well to state here that the dollar, as the most stable and most powerful gold currency of the globe, has attained such importance in all world markets that, with or without American bank branches, it will retain its position of eminence, because American credits have become indispensable for the financing of the world's commerce. The shoe is rather on the other foot: we might say that the very existence of, and the strong demand for, such large amounts of dollar credits may be considered as an incentive for the establishment of branches of American banks in foreign countries.

But, returning to the question of American branch banking versus banking through existing firms or institutions operating in foreign lands, we might approach the matter from two angles: First, is branch banking more desirable for the American bank itself? And second, is it more desirable for the American customer?

It is a well-known fact that, among the American banks which established branches abroad, many have since entered upon a policy of retrenchment. A great number of American branches have been closed, and others are admittedly being run at a loss. Furthermore, among the foreign banking corporations, which were organized by various banks and banking groups, the mortality of those which had foreign branches has been very high. About one-half of these foreign banking corporations have been liquidated, until now very few remain.

In other words, the results of our first period of experience would seem to show that foreign branches of American banks are not an unqualified success. That in itself does not, however, prove that the theory of establishing branches is wrong; it proves only that the theory

as applied so far in American practice has failed to show the same good results that apparently were obtained by some of the old branch banks of Europe and Canada. Why?

To begin with, all European banks have by no means been uniformly successful with their foreign branches during the past 10 years. In almost all the so-called "neutral" countries there has been a development very similar to our own, in that banks, which hitherto had been purely domestic institutions, suddenly launched out into foreign fields. Foreign trade corporations were established there as here—and liquidated in much the same way. And not only the neutrals, but almost all the European countries—except the Central Powers and Russia, which had other troubles of their own—suffered in the same way. England itself was by no means immune, and it is apparent that the past few years have been unpleasant ones for foreign branch banks, not only here but everywhere.

There is, however, this striking difference: while almost all banks engaged in foreign business have suffered losses, the proportion of loss has been vastly heavier here and in those countries abroad which were new at the game. That would seem to indicate that the establishment of foreign branches cannot successfully be undertaken hastily and on a large scale, nor by banks which lack experienced leadership and personnel. If branch banking, domestic or foreign, is to be safe and sound, it must be a structure of very gradual growth erected with the greatest caution and consummate skill.

Another important factor in this connection is that in Europe each country has but a very few large banks, with branches in every city and village of importance, whereas we, as a consequence of our opposition to domestic branch banking, have some 30,000 independent institutions. Thus the entire training of the European banker, from office-boy to general manager, is built up on the theory and practice of branch banking; while, until a few years ago, the complicated science of controlling hundreds of branches from a head-office was foreign to our bankers. The result is that a purely domestic Dutch or Scandinavian bank, for instance, which suddenly embarks on a career of opening foreign branches, has less to contend with than an American bank doing the same thing. The foreign bank is likely to make mistakes, due to lack of experience in other countries, but the American bank is in danger of making these mistakes, and others as well, due to its lack of experience and of properly trained men.

Looking at the problem from the point of view of the American customer, there is much to be said on both sides. For the American settler in foreign parts, or for the traveler, it is undoubtedly more agreeable to be able to deal with branches of American banks. Whether it is also to his best advantage depends upon a variety of factors. If he is unable to speak or understand the language of the country and if he is much in need of "first aid," it is safe to assume that he will encounter a more sympathetic and helpful attitude from his own bank's branch than from a foreign institution. On the other hand, unless the branch is an old-established one and on intimate friendly terms with the local banks, he may find the branch manager not nearly so well informed with regard to conditions and men as the local bankers, where good local banks exist, nor in a position to help him as effectively in dealing with his local problems. Nor will he be so likely to gain through the

intermediary of the American branch that intimacy with his customers, which he might attain by dealing through their own local banks.

It is often held, also, that an American bank with foreign branches can serve its clients more cheaply in opening credits or handling collections because it need not pay the charges abroad, which a bank working through correspondents must pay. This is only partly true; the item of running expense is as fatal for American branches as for others, and an American branch cannot long neglect the making of proper charges. Moreover, an American bank, which competes in an unbusinesslike way, immediately makes itself heartily disliked by the foreign banks whose customers it is trying to take away. While it may be able to stand the resentment of its American competitors, it can ill afford becoming a *persona non grata* with the local banks, because from the moment it forfeits their good-will it undermines its own standing and efficiency.

Once a branch manager has the local bankers against him it would be far better for him to close up shop and go home, and by doing so he would probably save money for his bank. For, if he is unable to get the friendly advice of the local bankers and that of the members of the local business community who know the field far better than he does, he becomes useless as a source of information for his head-office and clients at home, and, by reason of being out of touch, he is almost certain to cause his institution actual losses.

In discussing the pros and cons of foreign branch banking reference is often being made to Europe's experiences and practices without sufficiently careful analysis of these practices. While it would lead too far to venture into a complete discussion in this paper, it may be useful to state the main features.

Except where special reasons justified exceptions, neither the large English nor German deposit banks opened branches in foreign countries. Where intimate relations warranted it, special institutions were organized in order to deal with particular countries and to open branches therein. Thus, England established the London & Brazilian Bank and London River Plate Bank (now merged), the Anglo-South American Bank, the British Bank of South America, the Chartered Bank of India and China, the Hongkong and Shanghai Banking Corporation, the African banks, and many others. Germany started four banks operating in South and Central America and one in China; France and Italy founded their own institutions and started jointly the Banque Française-Italienne de l'Amérique du Sud; Holland established special banks for the Dutch Indies and for South America, and so on. These Colonial banks, by opening offices in countries with uncertain credits and fluctuating exchanges, rendered a distinct service, particularly where there was a scarcity of good local banks. But in order to do their business with reasonable safety they had to devote their entire attention to the conditions of the particular countries they served. The very complexities and risks involved in their task made the large deposit banks of England and Germany unwilling to open branches in these countries on their own responsibility. The only exceptions of importance among the European deposit banks are the French banks which opened their own branches in several foreign countries with fluctuating exchanges. It is true that before the war the German and the Continental banks opened branches in London. They were not established, however,

with a view to bringing new banking facilities to England, but rather for the purpose of profiting from the London market and in order to be able to open London credits with greater facility; just as there is a strong tendency now for foreign banks to gain footholds in New York. In this connection, it must not be overlooked that a most important part in financing and promoting foreign trade and in developing foreign countries has been played by the British accepting houses, or "merchant bankers"—private firms with intimate relations in all parts of the world and relying on their local correspondents and agents rather than on branches.

III

From the diversity of motives and practices sketched above, it can readily be seen that the question we have discussed in this paper does not admit of a categorical answer. The best school of thought in Europe would seem to indicate that the most important deposit banks in leading countries hesitate to open branches of their own in foreign countries, except where they move into centers of strength. Where a country's trade development requires banking facilities in untried or uncertain territories, or where adequate reliable local banks do not exist, it seems preferable to have branches opened by banks especially organized for the purpose of dealing with these regions, the so-called "Colonial banks." Where reliable local banks exist, the best policy would seem to be one which seeks to provide the advantages of having foreign branches, without actually establishing them. Such a plan can, of course, be conceived only along the lines of creating a closer tie than a mere business relationship between the American bank and its foreign correspondents. If these correspondents are the leaders among banks in their own countries, and if a real feeling of intimacy and mutual interest can be built up, then the American bank can offer to its clients greater facilities than it might be able to furnish through its own branches.

As stated before, no matter how efficient a branch may be, no matter how well liked its manager, it cannot hope to attain the same intimate touch with men and conditions as a leading local bank of good standing. It follows, therefore, that an American bank which can offer the real cooperation and service of existing first-class banks in foreign countries may be able to place at the disposal of its clients more valuable opportunities than banks with branches of their own. But it is equally true that a capably managed branch-banking establishment has more to offer than the ordinary bank which operates through routine correspondents.

Whether it is possible for a bank to create with its foreign correspondents a bond so strong that there exists a real community of interest is a problem which can be solved only by experiment. Stock ownership provides one means of approach; the mutual protection, which each derives from his ability to secure as a partner in his risks a trusted bank fully familiar with the local conditions surrounding the debtor, is another invaluable advantage of such connections. The strongest link, however, is to be found in the personal relations based on long-established intimate friendships. It is this frank relationship that enables both parties fully to understand each other's problems and that constitutes the rock bottom of confidence, predicated on knowledge, which is the foundation of a bank's power to serve its customers and its country.

INVENTORY VALUATION AND THE BUSINESS CYCLE

By H. T. WARSHOW

THE severe depression of the year 1921 has brought into active discussion among business men problems connected with the business cycle, which previously had either been entirely neglected or had been restricted to discussion in purely academic circles. This stimulation of interest has resulted in a correspondingly large output of literature on the subject. However, in spite of the abundance of literature covering the many phases of the business cycle and the methods of controlling it, very little consideration has been given to accounting devices for controlling or mitigating the severity of the business cycle.

The purpose of this paper is to present an "accounting" device by way of valuation of inventory, known as the "normal stock" method, which has worked successfully for a number of years in the practice of the National Lead Company and which has proved to be of great importance in the recent period of depression. It is maintained that a general adoption of this method, wherever practicable, will to some extent offset the effects of the business cycle by stabilizing profits and losses over a period of years and by exerting a salutary effect upon credit policies adopted.

I

The most important single factor in the study of the business cycle is the question of "credit expansion." Credit expansion, both for the ordinary needs of trade and for speculation, especially in the piling up of inventories on a rising market, is the most certain and regular concomitant of the upward swing of the business cycle.

During periods of prosperity prices continue to rise, resulting in a corresponding increase in profits, because in the first place, overhead charges and wages do not at first rise in the same proportion that prices do; and, in the second place, every additional advance in prices brings a profit on the inventory on hand which was previously purchased at lower prices. The buyer, especially if he is well stocked, favors a rise in price, for he is thereby enabled to raise the selling price of his entire stock on hand. Carried away by apparent success, business men continue to buy more and more merchandise at ever-increasing prices, in the expectation that prices will continue to rise. This viewpoint leads to an expansion of plant facilities and in other ways increases overhead charges. But the most serious single item is the piling up of very large inventories at rising price levels. As soon as some development in the business situation causes an expected or an actual drop in the demand for consumers' goods, prices begin to fall, bank credit is contracted, and it then becomes necessary to dump on the market large inventories bought at high prices, thus necessitating a further mark-down of goods, resulting in additional losses. The process becomes cumulative. This phenomenon manifested itself in a very concrete and convincing manner in the

year 1921, when most of the companies whose inventory had previously been valued on a cost or market basis suffered tremendous losses due to the writing-down of inventory values. In each of these cases, regardless of the inherent causes of the fall in value, the adoption of the normal stock system (by the very nature of the method) would have minimized the effect of the fluctuations in individual years and, to that extent, would have prevented the precipitous drop in profits in 1921.

The determining factor in the income of a business is the valuation of its assets and liabilities on hand at the end of the fiscal period, as compared with those on hand at the beginning of the period. The problem, therefore, reduces itself to the definition and determination of income within a given fiscal period. If the fiscal period were extended to, let us say, 10 years, the element of inventory valuation, provided a consistent policy were followed, would not be very important in the determination of profits, since the intermediate fluctuations would offset each other in the final analysis. But where fiscal periods are limited to a comparatively short time, such as one year, questions of valuation are of supreme importance.

No method of valuation of inventory has yet been devised that reflects in every respect the actual facts of a given situation. The cost or market basis, as it is generally used, is based upon the assumption that the goods on hand at the end of the fiscal period are made up of the latest purchases, or in other words, that the earliest purchases are the first to be consumed in the process of manufacture. This assumption is obviously not in accord with the facts in every case. The assumption that the latest purchases are the first to be consumed in the process of manufacture may, in some cases, approach the actual facts more closely than in others. However, the element of truth in an assumption is not, for accounting purposes, an absolute criterion of its value. Accounting is not a pure and exact science; there are no ultimate and absolute truths that are sought. It is more in the nature of a branch of logic and the assumptions must be such that logical processes will bring us to the most desirable conclusion—desirable in the light of practical experience with the results obtained. The desired result, in this case, is the promotion of economic stability by the elimination of undue fluctuations of inventory values caused by abnormal price conditions and speculation. A brief survey of the actual use of this method in the National Lead Company will serve to demonstrate how this aim is attained.

II

The process of manufacture of white lead covers a period of five to six months and for that reason necessitates a constant and more or less uniform quantity of goods in process. It is evident that, were this quantity of goods in process sold, the company would be compelled to cease doing business at least for a period of six months until the supply of manufactured goods could be replenished. A certain portion of the inventory is, therefore, for accounting purposes considered in the same light as plant equipment, such as buildings or machinery, which the company is compelled to keep on hand as long as it desires to continue the process of manufacture. This portion of the inventory is called the "normal stock." Normal stocks are provided for the basic metals on hand, goods in process, and manu-

factured products. The values are all based upon the basic metals contained plus the cost of manufacture to the various stages.

Inasmuch as the purchases of raw material from month to month approximately equal the sales of metal in the form of manufactured products from month to month, operations are based upon the assumption or fiction that the metal sold in the form of manufactured products during any given month was made out of the metal purchased during that month and that the normal stock is never impaired.

The normal stock is valued at 3.40 cents per pound, which was the lowest prevailing price in 1913 and 1914, the years in which the normals are assumed to have been purchased, since they were the first years of the operation of this system in the National Lead Company. This has resulted in the creation of a reserve in the form of the valuation of the bulk of the inventory at a constant price which is comparatively very low. This theory is analogous to the purchase of plant equipment, which is recorded upon the books at its original cost without any subsequent change, regardless of the current market price. The normal stock method of valuation, looked at from this point of view, is really a cost method. The essential difference between it and the generally accepted cost method of valuation lies in the definition and interpretation given to "cost" in this connection.

While the "normal stock" is assumed to remain on hand at all times, sales are of course made out of the normal stock whenever necessary. The fiction is maintained, however, that the normal stock is still entirely on hand and that some portion of it has been temporarily borrowed and will be replaced at current market prices. The valuation of the replacement of the normal stock brings a second element into the inventory reserve. To illustrate: Let us take the case of a normal stock of pig lead of 1,000,000 pounds at 3.40 cents per pound, amounting to $34,000, of which there remain on hand at the end of the fiscal period only 800,000 pounds, 200,000 pounds having been borrowed and sold. Assuming that the market price has risen to 6 cents per pound, it will cost $12,000 to replace the 200,000 pounds borrowed, so that the present value of the inventory on hand is the difference between $34,000 and $12,000. It is quite obvious that where a portion of the normal is used in the regular course of business, the proceeds would result in a very large profit due to the low valuation of the normal in the inventory valuation at the beginning of the period, unless a correspondingly low valuation were put on the inventory at the end of the period. It is conceivable that in some unusual period of great demand and limited supply, the whole normal may be consumed. This would result in an abnormally large profit for the period and necessitate the creation of a new normal in the subsequent period—were it not for the accounting provision (which is an integral part of the system) for the replacement at current market prices of amounts borrowed from the normal. It is evident that without this provision, the method would be incomplete and its purpose defeated, for a large book profit in one period would be followed by a large book loss in a subsequent period. This accounting provision meets difficulties of this nature by providing a reserve for the replacement of the portion of the normal stock consumed (which is called the "deficit") at market prices. In the above instance, an obvious way of giving effect to this principle of maintaining the normal

would be to continue the inventory at $34,000 and set up a reserve outside of the inventory of $12,000, which is the amount necessary to replace the 200,000 pounds of lead borrowed from the normal at the market price of 6 cents per pound. In practice, however, the simpler method for accounting purposes is to report the inventory as the difference between $34,000 and $12,000, or $22,000. In other words, instead of setting up this inventory reserve out of Profit and Loss, it is taken directly out of the inventory figure on the books. The inventory would therefore in this case appear as 800,000 pounds of lead valued at $22,000. This device makes the method perfectly elastic and gives full protection against the vicissitudes of the market. In the case of an excess over rather than a deficiency under the normal stock, the excess is valued at average cost, and it is only on this small portion of the inventory that a loss due to a fall in market prices is possible.

The practical operation of this system and the effect that it has had upon the present financial condition of the National Lead Company may be illustrated as follows: The market price of pig lead advanced from the low price ruling in the years 1913 and 1914, which was 3.40 cents per pound, to 11 cents during the war years, and on December 31, 1921, had again receded to 4.70 cents per pound and at the present time, (May, 1924) is slightly below 8 cents per pound. Had the basis for the valuation of the inventory been cost or market, the advance in the price level noted above would have required the company to show a small increase in 1915 and a continued increase thereafter, so that by 1919 the book profits would have been in excess of the results shown in the annual statement by seven or eight million dollars. These profits, however, could not have been realized except by liquidating the business. Furthermore, in the years 1919, 1920, and 1921, an offsetting loss of practically the same amount, due to declining prices, would have occurred and might have resulted in inability to maintain dividend payments and a possible impairment of credit. Inasmuch as this apparent profit was not taken onto the books of the company in previous years, it was not necessary to take the ensuing book loss when it occurred. The result was that in the severe depression of 1921, when other companies were writing off tremendous inventory losses and passing dividends, the National Lead Company showed earnings which, after deducting the payment of 7% on the preferred stock outstanding, amounted to about 11½% on the common stock of the company. This showing is entirely due to the use of the normal stock method of valuation of inventory, for had the inventory of the company been valued at cost, both at the beginning and at the end of the period, an actual loss of over two million dollars for the year 1921 would have resulted, instead of a profit of approximately four million dollars.

III

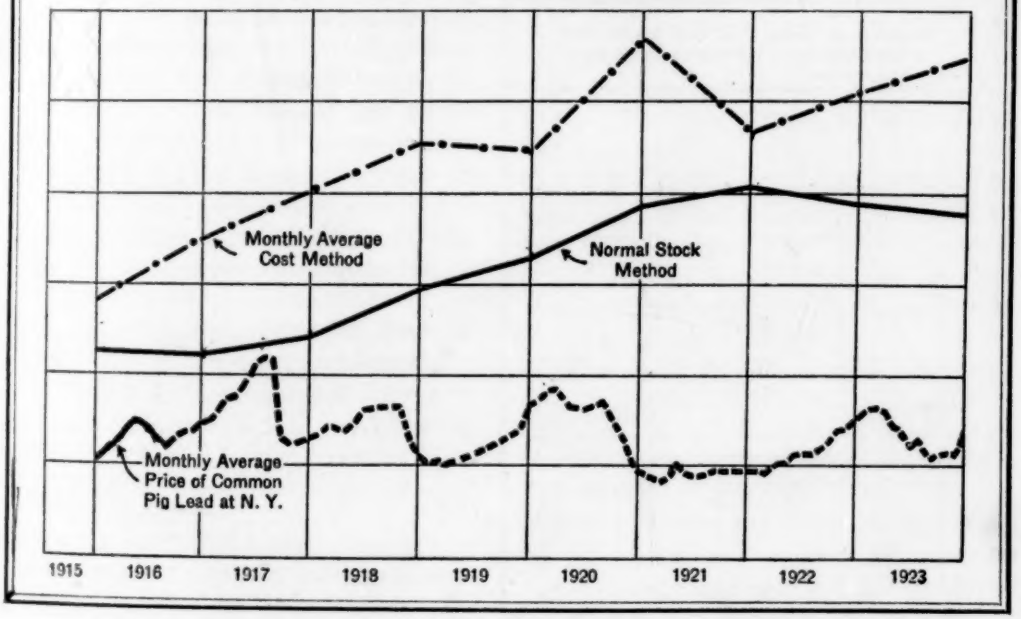
Problems of valuation, especially the valuation of merchandise inventory, are therefore seen to be a potent influence in the continued prosperity of an industrial organization through the various phases of the business cycle. The chart on page 31 shows the inventory priced on a monthly average cost method compared to the inventory under the normal stock method of valuation and illustrates very concretely the leveling process which the normal stock method brings about. The cost method takes the average purchase price for each month, be-

ginning with December, and applies it to the total quantity of inventory on hand, assuming that the inventory on hand is made up of the latest purchases. The normal stock method is applied in the manner explained in this paper. The average monthly prices of common pig lead at New York are also plotted and result in a curve of striking irregularity. The actual figures are omitted but the relation between the curves brings out the point very effectively. This curve illustrates graphically the stabilizing effect of the normal stock method of valuation of inventory, in spite of the uncontrollable behavior of the pig lead curve.

A comparative statement of the two methods of valuation (viz., cost or market compared to the normal stock method) over a period of 10 years, 1913 to 1923, which was made for the National Lead Company shows practically no difference in the net profit for this period, due to methods of valuing inventories. The ups and downs offset each other in the final calculation. The differences in individual years however are tremendous, the year 1921 being the most conspicuous case. Since fiscal periods are limited to only one year, it behooves us to anticipate to as great an extent as possible this leveling process and by some means, such as a safe and conservative method of valuation of inventory, to anticipate ultimate developments by avoiding the writing-up of book profits which cannot be realized and which are sure to be followed by book losses during a period of declining prices. The normal stock method of valuation of inventory has proved to be a very important factor in leveling the gains and losses over a period of abnormal price conditions, such as that which prevailed during the years 1916

Chart I

Comparison of Normal Stock Method with Average Cost Method of Valuation of Inventories



to 1922. The result is obtained by automatically offsetting undue inventory gains of one year against undue inventory losses of another year. The same effect is sometimes sought by the method of deducting certain amounts from the inventory valuations in the form of inventory reserves. This practice is more common in England than it is in this country. While it results in conservatism, it does not however have the advantage of a uniform and scientifically worked-out method which automatically creates the desired reserves.

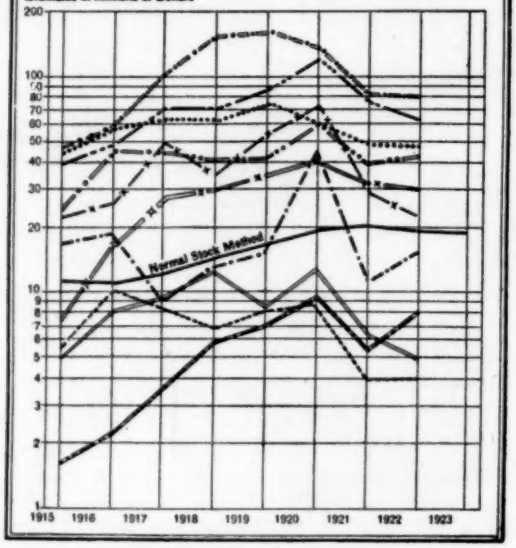
IV

It is not desired to make any invidious distinctions between the companies using the normal stock method of valuation of inventories and those which are using other methods of valuation. In order to illustrate concretely the effect of the normal stock method of valuation as compared with other forms of valuation over a period of years, 10 large industrial companies which suffered inventory losses in the year 1921 were taken and their inventories, as published in the respective annual reports for the years 1915 to 1922, plotted on logarithmic paper (Chart II) along with that of the National Lead Company. The names of the companies have been omitted, but the yearly fluctuations of their inventory values as compared with the stability of the normal stock curve are quite obvious. It is impossible to isolate fluctuations in the inventory curves due solely and entirely to methods of valuation. The quantity which it is necessary to keep on hand is an important factor. However, the purpose of the chart is to show the general, even trend of the normal stock inventory curve, as compared with the uneven and irregular trend of the generally accepted method of inventory valuation. This the chart illustrates very well. In practically every case, large profits were shown in the years 1918 and 1919, due to a great extent to increased inventory valuations. Corresponding increases in dividend payments and other forms of distribution followed the publication of these large paper profits. In the year 1921, when the market dropped, the paper profits set up in 1918 and 1919, which in some cases had already been distributed, were wiped out. Every curve on the chart shows a precipitous drop in 1921 except the normal stock curve. The normal stock curve is comparatively smooth, slightly upward from 1916 to 1920 indicating a natural growth of the business, and comparatively stable since that date.

Chart II

Comparison of Normal Stock Method with Cost or Market Method of Valuation of Inventories

Ordinates in Millions of Dollars



V

An important consideration in a discussion of any question which affects the determination of net income of corpora-

tions is the attitude of the Bureau of Internal Revenue. The "normal" or "base" stock method of valuing inventories was not accepted by the Bureau of Internal Revenue for tax purposes. Corporations which are continuing to use this method thus find it necessary to make recomputations of their inventories for tax purposes.

The Advisory Tax Board rendered its opinion in a very well considered decision.[1] The reasons given for the non-acceptance of the method were as follows:

1. That the practice has not been generally adopted. "To sanction this method of inventorying in the case of the very small minority of taxpayers who have used it, would work an unjustifiable discrimination against the great majority of manufacturers and dealers who have not used it."
2. That it has not had any considerable recognition as the "best" accounting practice.
3. That it does not most clearly reflect the true income of a given year, but tends rather to stabilize profits, and provide reserves against possible future losses.

While not taking issue with the Advisory Tax Board on this decision for the period covered by the excess and war profits taxes, it should be pointed out that the reasons given for the disapproval of this method are under present conditions no longer valid. The Federal Income Tax rate for corporations has been established at 12½%[2] and, although subject to change, will probably not vary to any very great extent for some years to come. In any event, we shall no longer have such wide fluctuations in tax rates from year to year as occurred during the period of the war, so that a method of valuation of inventory which levels the gains and losses over a period of time, even though in the opinion of the Bureau of Internal Revenue it does not give the most accurate income for any single year, will yield the Government the same amount of taxes over a period of years and will result in no discrimination against those taxpayers who are not inclined to adopt this method. In this connection it should be pointed out that Section 204 of the 1921 Federal Income Tax law permits a taxpayer sustaining a "net loss" to deduct it from the net income of the succeeding taxable year and any excess loss may be carried over and credited against the net income for the next succeeding taxable year. This provision, combined with a comparatively uniform tax rate over a period of years, should do away with any possible discrimination against taxpayers using varying methods of inventory valuation. The argument that "it has not had any considerable recognition as the 'best' accounting practice" would not necessarily hold for future years, for the acceptance of this method by the Bureau of Internal Revenue would probably stimulate the general recognition of it. The third reason given by the Bureau of Internal Revenue for the non-acceptance of this method for tax purposes, viz., that "it arises . . . . from a desire to play safe, stabilize profits, and provide reserves against future losses" is obviously a recommendation for the general adoption of this system rather than a reason against it.

The Bureau of Internal Revenue has been influential in the establishment of scientific cost and general accounting systems in many companies, which previously had operated by "rule of thumb," and in that way has benefited the economic development of the country. The Regulations have generally

[1] TBR 65 Cum. Bulletin 1919, p. 51, 22-19-53-1.

[2] The varying tax rates on individuals and partnerships present a separate problem, which is not raised in this paper.

tried to follow the "best accounting practice" in each trade or industry. However, it must be remembered that in accounting, as well as in other fields, the "generally accepted" practice is not always the best, and that in the course of time better methods may be established in the light of experience.

VI

It is quite obvious that the normal stock method as described presents some striking differences in practice and results from the methods commonly used. The question naturally arises: Under what conditions is this method warranted? While it is difficult to formulate a comprehensive definition covering this point, it may be pertinent to draw attention to the character of the white lead industry by way of illustration. The manufacture of white lead is one of the oldest manufacturing industries which employ chemical processes requiring a long period of time for completion. Pig lead is the preponderant element of cost in the manufacture of white lead. The proportion of pig lead consumed in the white lead industry however is small compared to the total production of pig lead, averaging not more than about 20%. For this reason the forces of supply and demand determining the market price of pig lead are beyond the control of the white lead industry. Moreover, the sources of supply are widely scattered. A political disturbance in Mexico, for instance, may cause a sudden rise in the price of pig lead. Since there is a turnover of but twice a year, such variations afford no speculative opportunities, and those who expect to remain in the business and be successful must possess inherent and commercial conservatism. The white lead industry is not unusual in this respect. Inventory prices of most of the basic industries are subject to forces which are very often beyond their control.

In any business, therefore, which must hold itself responsive to serious fluctuations in the market prices of its basic elements and which, because of natural obstacles to rapid readjustment, cannot readily protect itself, a desirable method of inventory valuation is one that adapts itself sufficiently to current advances and declines in prices but controls the major portion of its merchandise assets by stabilizing influences.

The leveling of inventory gains and losses, with the comparative stability of yearly profits which this method brings about, tends to develop a feeling of confidence among both the stockholders and the creditors. It also exerts a subconscious effect upon business policy which is very desirable. Prices of manufactured articles are kept in more proper relation to prices of raw material. The management is not elated by apparent profits or depressed by apparent losses. Such elation and depression are responsible for most business follies. The normal stock inventory automatically creates a reserve that strengthens the basis for credit, gives stability, and makes expansion safe. Moreover, it has the great advantage of being a concrete suggestion for mitigating the severity of business cycles, which has received a thorough trial over a most difficult period and has proved its effectiveness most conclusively. As the basic theory and the practical application of this method become more generally understood by the business community, a more general adoption of this method will follow and will undoubtedly help to prevent a recurrence of the 1921 experience.

GERMAN PRICES AND GERMAN COMPETITION IN INTERNATIONAL MARKETS

By JOSEPH HELLAUER

THE fall in German exchange which occurred after the peace treaty has brought into the determination of prices in German economic life relationships which economically trained minds in the pre-war time would hardly have been able to describe. In the difficult school of a lasting and even now aggravated crisis, economic science has had to learn a great deal. New problems have arisen. New knowledge has been gained. Old knowledge has acquired greater definiteness and clarity. Furthermore, economic policy and economic practice have entered upon new tasks and in part have had to follow new roads. The peculiar conditions which, however, are typical for a country with greatly depreciated currency have shown themselves in many respects also in France within the past few months. They may also have more than a theoretical interest in foreign countries which are not operating directly under depreciated currency but which are affected indirectly by the important influences which have been expressed in international trade and which are still to be expressed. Furthermore, some conclusions may be drawn from a study of prices regarding future costs of industrial production in Germany and the future competitive ability of German manufacturers.

I

One of the peculiarities called forth by the economic conditions of the war and post-war periods appears in the fact that the depreciation of the mark as expressed in exchange rates for foreign currencies[1] shows great and increasing divergences when compared to the depreciation in domestic commerce which is exhibited in the rise of prices for goods, services, rents and leases, and the like. It has been customary, therefore, to distinguish between the value of the mark in foreign countries and the "domestic value." The contrast of the two conceptions in this may give occasion to errors, for the domestic value is equivalent to the purchasing power of the

[1] During the war, German exchange maintained itself at a relatively stable level. Even in April, 1918, the average rate for the dollar in Berlin was 5.10 marks (par 4.20), although it is true that the rate on October 24, 1917, had reached the height of 7.50 marks. With the break-up of the German front in the summer of 1918, the rate started to rise, but even on the day of the armistice, it reached only 7.33. Gradually it was recognized that the armistice would not lead to the expected peace. The rate, therefore, up to the provisional signing of the peace treaty in July, 1919, had risen to 15.04 (monthly averages), continuing further to 58 marks on January 19, 1920, the day of the official signature of the peace treaty. Since it was hoped that Germany would be enabled to maintain itself economically, the rate which in February, 1920, had risen to 103.75, in June fell again to 36.25. Nevertheless, it fluctuated according to the level of hope induced by the various international conferences regarding the solution of the reparation problems. The first great step upward took place in the fall of 1921. From 85.50 on September 1 it rose at an accelerated rate to the height of 295 on the twenty-fifth of November. It is true that the rate in December and in January, 1922, was somewhat lower (Conference of Cannes), for a short period even under 1920 rates, but in the next month the rise continued though with fluctuations. The Conference of Genoa, May, 1922, and the Paris conference of experts (end of May and be-

mark in domestic commerce. When one speaks of the change in the mark as compared with the pre-war period, one implies that for a unit of money today one secures so much less of commodities than he secured before the war. But the change in the foreign value of the mark does not express the same thing. To know this one must observe in addition the change in value of the mark in relation to foreign currencies and the extent to which prices in the given foreign countries themselves have changed since the outbreak of the war.[2]

With the great variations in commodity price developments on international markets it is understandable that ordinarily only comparisons of the purchasing power of the mark in domestic transactions with the change in its purchasing power as against foreign moneys are made, though there too values are really used in the same sense. This value will, therefore, in further discussion not be called "foreign value" but the "exchange" value, while the foreign value of the mark will be used to designate the purchasing power in terms of foreign commodities as illustrated in the cases of American goods above.

If the course of domestic value of the mark is compared with the course of exchange rates, one may grasp the extent to which the German paper standard suffered depreciation as compared with its former gold standard, on the one hand in the prices in inland commerce, on the other hand in the exchanges. The latter shows up fully only in relation to a foreign money which has retained its full gold value. As such appears today in the first rank the United States dollar. On that account it is usually taken as the basis for reckoning of computations concerned with this question.

It is difficult to determine the domestic value of the mark. Domestic prices of wares and services have not changed uniformly. One must, therefore, choose averages for commodities chosen, partly because computations can be made and partly because of their importance for an understanding of the whole situation. Obviously, the result will differ some-

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(Footnote 1 continued from page 35)

ginning of June) brought important improvements in position. The quoted rate on June 2, 1922, brought the mark once more to 271.75 to the dollar. With the collapse of the hopes which had been set upon these conferences, the mark went rapidly upward, particularly after the end of July (on the twenty-fifth of July the rate was 500). On November 8 the level of 9,150 was reached, followed by a decline to 6,175 on the twenty-first of November. But the beginning of the year 1923 brought forth the occupation of the Ruhr. This was followed by a rise in the mark to 49,000 on January 31. Once more the Reichsbank succeeded in lowering the rate artificially. For a while the rate was held stable at 18,900 and later at 21,000, but by the end of April the power of this pressure was at an end and now the rate rose by leaps and bounds, particularly from the end of July, 1923, at a terrific rate. At the end of July the dollar was worth 1,100,000 marks; on the thirtieth of August, 11,000,000; on the thirty-first of October, 72.5 billion; on the fourteenth of November, 1.26 trillion; and on the twentieth of November, 4.2 trillion. This last rate has since that time been officially maintained, though from time to time the foreign exchanges have valued the mark lower. At the present—beginning of May, 1924—foreign countries are quoting the mark at more or less like values. The rate indicates that the dollar in German paper money is worth exactly one-trillionth of its parity. The gold mark today is, therefore, in commerce worth a trillion paper marks.

[2] For example, the prices in the United States of America beginning in 1923, as compared to the pre-war period, were on the average 50% higher. Then, with the depreciation of the mark in the exchanges to about 1/5,000 (that is, an exchange rate of 20,800) the purchasing power of German money in terms of American wares was about 1/7,500 dollar or, in other words, prices in Germany should have been about 7,500 times higher than before the war if the exchange should have been in accordance with both the purchasing power of money and the exchange rates. If prices were lower than this in Germany for German goods, whose sale in the United States of America came to question, then there developed an exchange export premium which will be dealt with later.

what according to what is taken into consideration; further, the values of the mark so computed can be only approximate. The so-called index numbers[3], of which a considerable number are currently determined in Germany, must be utilized in order to ascertain the changes in the inland value of the mark. Special index numbers for wholesale prices have been constructed, likewise, for retail prices and for the cost of living. The most important is the cost-of-living index of the Imperial Statistical Office, which is reckoned weekly and monthly, based upon the necessary expenditures for two adults and three children for food, heat, light, rent, and, since April, 1922, also for clothing, on an average which has been determined for 71 communities. One has gradually become accustomed, in spite of the fact that this is by no means complete, to recognize in this index the depreciation of the mark in domestic transactions, in so far as it affects the consumer.

The normal price levels of different countries, which are in regular commercial relations with one another, fluctuate constantly with a tendency for any changes of an unusual nature to bring about compensating adjustments. Important price changes in one country—especially in the articles which are the subjects of exchange—bring similar price changes in the other country or bring about a change in the exchange rate, so that translated in the same currency, after a time the same general relation between inland prices and foreign prices results. If the change comes first in the exchange rates, this operates on the price level of one or both of the two countries in such a manner that it restores once more the same general relationship of prices which prevailed earlier. Applying this to present German conditions—if through money inflation the value of money in German domestic commerce falls so that the prices rise, then there must come about, through a similar decline of the exchange rate of the mark in the foreign country, an equalizing force which makes German goods just as expensive as earlier for the foreign country, and for Germany foreign goods will rise to such prices that the same relationship between the prices of inland wares and foreign wares prevails as before the change. If, however, as a result of international speculation, the exchange rate of the mark sinks first, then the prices in Germany must rise so high that for the transactions between the two countries the same results appear as in the earlier case.

Now in general since the war this normal operation between commodities and prices and exchanges, as far as Germany comes into the question, has been destroyed—the statement may be made also with reference to a group of other European countries. It is in this way that the difference previously mentioned which exists between the exchange value and the domestic value of the mark has developed. How is this condition to be explained?

The chief cause, and at the beginning particularly the exclusive cause, for the development of different values of the

[3] The purpose of the indexes of the cost of living is to determine how the costs of living of a particular standard for one person or for a family have changed from time to time. Today in Germany one commonly calls the level of costs which prevailed immediately prior to the war unity, so that a single figure will show how much the cost of living has increased. The various indexes currently computed all take as the basis a very modest living. Furthermore, there exist between these different indexes great differences on account of the variation of the make-up of the basic expenditures. Some, for instance, include only food; others add clothing and even the cost of heating, lighting, and rent.

mark was that through politico-economic measures the natural interplay between domestic and foreign markets, between domestic and foreign prices, was obstructed, so that in so far as German economy was concerned, purposely and artificially inland prices were held under a parity which would have developed according to the exchange rates for foreign currencies. Even during the war, in part the economic blockade of Germany and in part the domestic so-called "compulsory economy" had developed an isolated condition for Germany, which to a great extent was untouched by the economic happenings in the world market. It was possible in this way, in spite of the pressing need for grain, butter, and others of the most important foodstuffs, to keep the prices lower for them than for similar goods in foreign countries. Nevertheless, it was impossible to avoid the illegitimate trade (Schleichhandel) which the officials were never wholly able to suppress, which sold commodities at much higher than the official prices. In spite of the need of the domestic population for other foodstuffs, it came about that a considerable quantity was smuggled from Germany over the border to foreign countries to take advantage of better prices.

In general, compulsory regulation utilized two means—direct influencing of prices and assurance of the satisfaction of most pressing needs in spite of compulsory low prices. The first was accomplished through the fixing of maximum prices or the less strict "correct" prices by official influencing of cartells and special war economic organizations in their price policies, by the performance of commodity distribution by official bodies at correspondingly low prices, by prohibition of profiteering for producers and middlemen, in combination with prohibition of unnecessary transfers of goods. The assurance of the satisfaction of most pressing needs was sought through the influencing of production in various ways; through the conscription of goods; through the provision that produced or imported wares must be delivered at certain points, preferably to officials or to special war economic organizations; by means of apportionment on the part of officials or through prescriptions for private enterprises with regard to apportionments whereby, for instance, delivery had to be made according to rules with the help of ticket and certificate systems; through the control of imports, which were handled in a large measure through the war economic organization itself; and lastly through export prohibitions and export control.

After a long, terrible transition, after the armistice and the economic blockade had finally been given up, the compulsory economic structure of war times, which was only a necessary evil and with which no one expected to be satisfied, was gradually torn down. That it was not done more quickly and more thoroughly was due to the two economic goals which were followed. It was not considered desirable that the foreign exchange rates should be driven to new heights through a suddenly increased demand for foreign goods, also that a certain control of export (especially with regard to the utilization of the bills of exchange thereby produced) kept the course of bills down. A sudden rise of the inland price to the level of world prices was to be avoided if possible in order to reduce the need of the broad masses of the population, whose incomes were not rising in similar measure and at similar times. Furthermore, it was rightly held that, as long as the domestic value of the mark remained

higher than its "exchange" value, a rise of the latter would be more easily possible with the entrance of half-way normal economic and political conditions than if the domestic value were so much below the "exchange" value.

II

Most important during the post-war period for the artificial maintenance of the level of the inland value of the mark —or, in other words, for keeping down the cost of living and so the general price level, particularly grain and bread prices, prices for coal, railway freight rates, and rents—was in general the prohibition against profiteering for articles of daily need through the law against profiteering of May 8, 1918. Among all the commodities for which there existed compulsory regulation in war, bread was undoubtedly the most important and here regulation was most successful. It was difficult, therefore, to decide to give it up and only as late as 1921 were some of the regulations removed. Up to that time the entire bread-grain of inland producers, above a given amount for personal use, had to be delivered to the Imperial Grain Office, which combined it with imported grains and gave it to the communities in the form of grain or flour. The communities in turn took care that the bread produced from these grains, as well as flour, was distributed among people only against bread tickets in rationed amounts. Grain prices were held very low. For instance, the price of rye at the beginning of 1921, when dollars had risen to about 18 times their former value in terms of marks and when the rye prices in the United States of America were more than double the prices of July, 1914, was fixed at about 8-fold the pre-war price when 40-fold would have been nearer the new parity. In order to accommodate agriculture, the so-called "transfer" procedure was instituted. Accordingly the individual grain producer was compelled to deliver to officials at low prices an amount figured according to the total need for the Empire, while the remainder of his production could be sold in the open market—that is, could be sold at prices which approximated world market prices. The "transferred" grain was made into bread, which in turn was delivered only against bread tickets, but now only to the economically weaker of the population. There was now ticket bread and ticket-free bread. How much the price of the first was kept artificially low is shown by the following example. On June 2, 1923, 1,500 grams of ticket bread, after the price had been raised to more than double, cost 1,900 marks. At the same time the same amount of ticket-free bread cost 3,500 marks. Foreign rye was quoted at that time at about 1¾ million marks, while the Imperial Grain Office paid for the "transferred" grain on the average only 600,000 marks. The Office was compelled to purchase a part of the needed grain in foreign countries, but the Imperial Government assumed the difference in price in order that the bread prices should not be raised still higher. In the fall of 1923 this kind of bread regulation ceased. Trade in grains and breads was now in general just as free as in other wares (although the control of price-fixing was subjected to the profiteering law). Only a bread-grain reserve was maintained by the Imperial Grain Office, thereby eventually to act in a regulatory manner in commerce, and a bread tax according to ability was levied in order that a cheapening of bread, if possible, could be carried through for the very needy.

III

The bread of manufacturing is coal. For German coal economy there existed a communal economic organization on the basis of the law of March 23, 1919. In accordance with its provisions the fuel supply of the Empire was placed under the supervision of the Imperial Economic Ministry, which directed the Imperial Coal Council, in which besides the mine operators, workers, and officials, coal trade, and coal consumers, including transportation enterprises, were represented. For coal production the law provided a compulsory syndication. The law provided that the owners of coal mines should join in syndicates according to production areas and all the syndicates should form a federation called the "Imperial Coal Union." To this body was given the obligation of fixing the selling price for the wholesale trade, in which it was however compelled to take account of the interests of users. Moreover, the Imperial Economic Ministry possessed the right, through its representation in the sessions of the Imperial Coal Union, to lower prices with which the public welfare was threatened through the forcing up of prices. On the basis of currently determined coal prices, communities and circuits set local retail prices up to the end of 1923. Coal for retail consumption was likewise given only against coal tickets. Because of the organization set up, coal prices could be fixed only with broad protection of social and economic interests. Actually, German coal prices were for a long time held under parity for English coal. On January 1, 1920, the price for Westphalian coal Number 1 amounted to only 17% of the price for an English coal, which was quoted the same in 1913. On April 1, 1920, the German price was only 18% of the English price. Then from the middle of 1921 on, the price of English coal declined rapidly and the ratio of German to English prices was raised, but German prices were always lower. Even in the second half of 1923, when the Ruhr occupation became operative, the German coal prices were on the average 40% under world-market parity. Moreover, it is necessary to take into account that in German coal prices a coal tax was included, which eventually was raised to 40%. From the middle of 1923, however, prices could no longer be kept down. The heavy burden which the Ruhr occupation brought with it for Westphalian coal production, and the far-reaching elimination of this important German production area from traffic with the unoccupied areas made large increases necessary. On October 1, 1923, the price of Westphalian coal amounted to more than double that of equivalent English coal, which even then cost almost double the peace price. As a consequence of the abnormally high prices, sales stopped. Prices had to be reduced again. The government removed the coal tax, but coal prices today in gold marks are about double the pre-war prices. German manufacturing and transportation enterprises no longer possess an advantage arising out of coal prices.

IV

German industry has for a long time had an important support in relatively low railway freight costs. The Imperial Rail Administration has regarded it constantly as its most important duty to serve industry and the people. In times of rising prices they have sought to increase the heavy cost as little as possible through freight increases. Consequently, only very roughly was the depreciation of money followed by cor-

responding rises in freight rates. According to one published collection of freight index figures in *Die Wirtschaftskurve,* the freight rates on March 1, 1921, for instance, averaged 5.88 times as great as pre-war freights, while the wholesale price index at this time showed a rise of about 20-fold. Still later, in order to remove the burden from the Imperial finances, freights were energetically raised. Afterwards the advances took place usually only every two or three months at the most, sometimes once a month; the upward bounds of exchange rates for foreign moneys left freight tariffs far behind. Imitating the example of manufacturing and trade, tariff base figures were fixed on August 20, 1923, which represented gold-mark prices; to compute the actual tariff it became necessary to multiply these base prices with the published figure of dollar exchange, the rate used being the rate on the day of publication. With the rapid depreciation of the mark, these multipliers lagged, so that on November 1, 1923, tariffs were expressly stated as gold-mark tariffs which had to be paid at the going rate for the dollar on the day before the payment was made. Even with this method the Imperial Railroads suffered important losses in the changes from one day to another, which ceased only with the introduction of a stable money. Today German railway tariffs are on the average about one-half higher than in the pre-war period. For a while they went somewhat above the average increase of wholesale commodity prices and today stand only a bit under. Moreover, the advances in freight rates vary for individual commodities in part. There are some commodities for which the increase amounts to more than 100%, sometimes almost as much as the traffic will bear. As a whole, it must be declared in general that German industry and commerce have been able since the fall of 1923 to secure no important encouragement from freight rates such as they secured before the war.

V

The only artificial cheapening, if one disregards wages and salaries because of their peculiarities, that has been maintained until today in any important measure exists in connection with rents. The rent protection introduced by legislation, through which house rents can be reckoned only in determined relationships to peace-time rates and according to which renters cannot be given notice, has subjected house owners to very heavy burdens for the general benefit. It must be admitted that this has had for the public one very unpleasant result. The need for new dwellings has developed a fearful housing shortage. In the *Wirtschaftskurve* it is estimated that for a peace-time rate of 100 marks the rent in 1920 was 120 marks; in 1921, 135 marks; November, 1922, 203 marks; November, 1923, 6,900,000,000 marks.

It is evident that the operation was finally an almost complete confiscation of the return. It is true that there were added to the rents proper certain surcharges which the householder had to pay, namely, taxes, insurance, and so forth. The obvious result that the houses gave no return to their owners, but that payments had to be made to keep them up, did not change matters. Now, however, in the course of the year 1924 the rents are gradually to be brought again to peace levels, although the returns herefrom will accrue only in smaller part to the house owners and chiefly to the state and to the communi-

ties. The result will be that also this last cheapening factor in living costs will soon have disappeared. In April of this year the rent was already 35% of the peace-time rate.

VI

In general, objects of daily need—the conception of such objects was widely interpreted—were restricted in their price advances through the ordinance against price raising of May 8, 1918, and its revision of July 13, 1923. Accordingly, any one who demanded, accepted, or promised a price for an object of daily need which contained an excessive gain was to be punished for profiteering. To control this, which with other matters was one function of the Price Control Office, there followed a very careful calculation of prices. It was admitted that the price should contain the special production costs and corresponding portion of the general costs of doing business, interest upon owned and borrowed capital required for production, and risk premium for eventual losses, the entrepreneur's salary as compensation for the work performed by the entrepreneur, and finally a suitable profit which in any case could not be higher than the usual profit in the pre-war period. In this way, commerce and industry were compelled in general to calculate more exactly than they did in peace times. A peculiar consequence of these price-fixing provisions was that for the commodities to which they applied—excepting the special conditions of the cartell system—there could be really no uniform price, excluding only the individual lots of similar wares in the hands of the same entrepreneurs, which might be based according to an exactly calculated average price.

It was very harmful for business men, in part ruinous in operation, that up to 1922 they had to continue their calculations of the costs figured on the basis of the amounts expended, no matter whether in the meantime the mark had further depreciated or not. Legislators adhered obstinately to the fiction that a mark equaled a mark. Severe losses unavoidably arose and many retailers finally lost their entire business capital, thereby becoming incapable of making further purchases. Large manufacturers and wholesalers knew better how to avoid the operations of the legal regulation, although in part they also suffered very considerable losses. The claim was urged that calculations should be made on the basis of reproduction cost, whereby it was understood that the selling price should be so constructed that it contained the costs which were necessary at the time of sale to procure or to reproduce similar goods. In this way the capacity of the business with regard to the size of its stock could be more or less maintained. This claim was denied, but in December, 1922, certain ministerial regulations, which were in their most important aspects included in the revision of the ordinance mentioned above, admitted that the general depreciation of money, which took place after the expenditures had been made, might be taken into consideration. The declaration that in so far as no panicky market situation prevailed, a price should not be considered as profiteering when it was no higher than the market price, met, although very late, the greatest and most pressing needs of commerce and manufacture. Nevertheless, the consequence of the above-mentioned profiteering law was that during the progressive depreciation a rapid adjustment of prices to the lowered value of money was hindered or made impossible. Particularly in the retail trade,

this showed itself clearly. That the gap between domestic and world exchange values of the mark could be maintained so long and at such a high figure is to be traced to no small extent to this law.

VII

This sketches the second cause of the rise in the difference between the domestic value and the world-exchange value of money. In times of large and sudden money depreciation, commodity prices do not ordinarily follow to the full extent the figures indicated by exchange quotations, especially for commodities which are produced for domestic consumption and sold in domestic currency. Economic relationships are too varied and complicated to take account daily of the value of money as shown by exchange quotations in all the trade relationships for infinite variety of wares in wages and salaries, freights, and so forth. The popular conception is too much attached to money as a measure of value.

Business transactions use likewise the same measure of value for calculations of accounts and there exists a certain difficulty if a changed measure of value is to be taken as a basis. Furthermore, adaptability and its willingness to adapt vary widely in different branches of trade. The wholesale trade for imported wares is customarily the most rapid to adapt itself to changes, and necessarily so because its own costs of goods are directly dependent upon the current exchange rates. The wholesale trade for domestic wares, on the contrary, lagged very considerably behind and even here there was a difference depending upon whether raw materials or wholly fabricated products were dealt in. Just as wholly fabricated products show less the changes in prices due to business conditions than raw materials, so also with fluctuations in rates for bills of exchange. The raw-material trade is more mobile than manufacturing, the products of which are often the result of long production processes and the prices of which are dependent upon various elements of cost, wages, salaries, depreciation, the amount of which in money units does not change so rapidly. Customarily the retail trade is slowest in adapting itself to changes, partly because retail establishments are managed by men who are less well-trained and more short-sighted, partly because the purchasing public, whose income (particularly wages and salaries in large part) does not follow exchange fluctuations, protests against frequent and large price changes, entirely aside from the operation of the earlier-mentioned profiteering law, which in Germany still operated to retard price changes.[4] Moreover, conditions differed according to the depreciation

[4] How the various branches of wholesale and retail trade adapted themselves in different ways to money changes is portrayed by the following figures taken particularly from *Wirtschaftskurve*.

In the year 1922 the dollar rate from October to November changed from 513 times the peace rate to 1,488 times. The wholesale price index of the *Frankfurter Zeitung*, computed monthly for 98 commodities, rose from 432-fold to 945 times the peace-time rates. In other words, the exchange rate had risen 190%; the wholesale prices followed on the contrary with only 119% rise. Then the wholesale prices attempted to catch up. Actually they rose from November to December, when the dollar rate rose from 1,488 times to 1,777 times, 19%, from 945 to 1,674 times—that is, 77%—and thereby had practically caught up with the exchange rate. Often in the course of the past year wholesale prices caught up because of a temporary decline of the exchange rate, which they did not follow or followed only partially. Wholesale prices remained behind again when the dollar rose from January to February, 1923, from 2,045 to 9,524 times the pre-war parity, the rise in prices only from 2,054 times to 7,159 times. However, from February to March a fall of the dol-

period selected. Depreciation held itself in narrow limits during one period, during another or longer took place in great leaps. Furthermore, the Germans, who were known as economists on account of their adaptability, could not divest themselves of the fiction that a mark equaled a mark. They saw in the higher prices a rise which was to be fought and not simply the expression of depreciated money. It was long before they became accustomed to reconstruct the money side of the price quotation according to the value of the money, when it happened that daily or even several times daily it was necessary to compute such changes. The capacity to take completely into account the money side in itself and in business transactions and to make necessary changes with fluctuations of the dollar rate was first fully recognized when the complete collapse of the mark occurred in the summer and fall of 1923. Ultimately this understanding became the possession of practically every farmer, housewife, retail dealer, and worker. However, that was about the time when gold-mark reckoning came into effect, whereby the amount of money to be paid was computed according to the current exchange rate. Then also the demand for a stable measure of value was satisfied.

VIII

The fact that the cost of living in Germany up to the stabilization of the mark in the late fall of 1923 rose continually less than the dollar, coupled

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(Footnote 4 continued from page 43)
lar rate from 9,524 to 5,381 times brought with it a change in wholesale prices of from only 7,159 times to 6,770 times pre-war parity. Relatively, therefore, wholesale prices were at that time considerably higher than dollar parity. However, they were still far under world-market equivalent, because even in the United States of America itself, wholesale prices were on the average about 50% higher than in the pre-war period.

How varied a price determination for domestic and foreign commodities took place in relationship to exchange rates is shown by the fact that, during the above-mentioned change of the dollar rate from October to November, the index for 10 domestic wares rose from 304 to 623, about double, while the index for 10 foreign commodities rose from 481 to 1,267—that is, not much less than the change in exchange rates.

The difference in the adaptation of wholesale and retail prices to exchange rates is also shown by the following. Ten commodities rose from January to February, 1923, in wholesale from 1,895 to 6,548 times the pre-war rate; in retail trade, on the contrary, only from 1,142 to 2,875 times. Obviously, such great differences had to be smoothed out gradually, which took place in such a way that in times when in wholesale prices a certain stability had been reached, retail trade continued to raise its prices. Nevertheless, only slowly did they follow the money depreciation. First with the introduction of the gold-mark prices in the summer of 1923 did it become possible in some measure to keep step with exchange rates. In general the cost-of-living index lagged behind the rise of exchange rates even more than retail prices. This condition came about because in this index not only the changes in retail prices are recorded, but that for long periods in spite of the large increases in dollar rates, rents remained unchanged. Furthermore, the necessities of life, particularly bread, were subject to severe price regulation. So it came about that, for example, the increase in the cost-of-living figure of the Statistical Office for the budget with clothing was in February, 1923, only 1,643 as contrasted with the rise of 2,575-fold in retail trade and with an exchange rate for the dollar of 9,524-fold. At the time of the complete collapse of the mark in the fall of 1923 there were weeks when the maladjustment between exchange rates and the cost-of-living index was even greater. But this served to protect the great mass of population, whose salaries and wages usually lagged even more behind the changes in exchange value of the mark than commodity prices. Gradually the cost-of-living index followed exchange quotations, so that today it stands somewhat above the rise of the dollar rate —at the end of April, 1924, 1.14 trillion as contrasted with about 1 trillion times the pre-war rate. Even then, considering the money depreciation, it stands much below the cost-of-living index in countries with good currency conditions. In European countries, whose exchanges have best maintained their values, the cost of living today is from 70% to 80% higher than in pre-war times. That would correspond for Germany to an index number of from 1.6 to 1.7 trillion.

no longer operate on the same scale as with a paper profit which became actual-

with the increased costs of living in countries with good money rates for all work, made it possible to keep German wages expressed in gold at a much lower level compared with pre-war relationships than in countries with high-value money. It must be remembered that because the rise of living costs in the United States of America, say at the one-time figure of 50%, with an exchange of living cost in Germany, implies really only half a simultaneous rise of living costs in terms of dollar rates, so that the relationship between German and American living costs has declined to about one-third of the relationship in pre-war times.

In many branches, however, during part or all of the depreciation period the wages of laborers rose less than the cost-of-living index. That meant that real wages of the laborer were smaller than in peace times. When the rapid advances in the cost-of-living index in the summer of 1923 brought them close to the danger that through the lag of nominal wages, real wages would sink to an intolerable level, automatic increases of wages were first demanded to correspond with the cost-of-living index; later, gold wages and salaries. Although in this way the most pressing needs were met, today the real wages in many branches are very considerably below the pre-war level.

For an enterprise the prices of whose commodities have increased more than wages, and that was the case as a rule with large undertakings, the outcome was (assuming the performance of the laborers to be the same as in the pre-war period) that the share of labor in the price of the products had become smaller than previously. However, in general the amount of work done by German laborers in the post-war period was smaller than before the war. This decline varied in different branches of industry; and in general the performance has again increased. At any rate, investigations, which were instituted by the *Wirtschaftskurve,* have yielded the conclusion that the share of wages and salaries in the price of products of labor has in the majority of cases been reduced as compared with the pre-war period.

IX

Out of the lower wages, the lower prices for raw materials and supplies produced in Germany and other lower costs such as freights, rents, and so forth, in comparison with countries which had not suffered inflation, there arose for German producers a great advantage, particularly in the early years after the war and in part immediately after a particularly large decline in mark values, which was not followed by equivalent increases in wages and material prices. In addition, the long-maintained fiction that a mark equaled a mark led to mistaken calculations; depreciation and other expenses were calculated just as in peace times, taking little or no account of the decreased value of the mark and the need for changed methods. The first led to an increased ability in competition with the foreign countries, which however was illusory in large measure because other entrepreneurs—the sellers of raw materials, railroads, and the like—suffered corresponding losses, even if one for the moment disregards poor living conditions of workers, which were a consequence of low wages. In the second case, the false calculations meant real losses of capital for the particular undertaking itself, although the calculations for the most part showed unusual gains. Scarcity of capital began to be felt and often enterprises discovered they could

socio-political reasons take the step eral, exportation could take place only

no longer operate on the same scale as before.[5]

Export premiums developed out of the conditions attending money depreciation; these led to the notorious "exchange" dumping. In the examples above, there is a possibility in the first case of underbidding foreign production by 50.9% and in the second case by 82.9% without being compelled to reduce profits from a normal level. It is evident, therefore, that the so-called "dumping" was not really dumping. It differs from dumping, as that term was understood in the pre-war period, through the fact that there was no sale abroad at lower prices than were demanded normally in domestic trade and that therefore there was no sale without smaller gain or with greater loss abroad than at home. Although there has been some real dumping, it is peculiar in that it has generally been done unconsciously. This was the case when, on the basis of mistaken calculations, sales were made with a paper profit which became actually a loss. We have to do here not with lower-than-domestic prices but with prices which wrought losses in both. Many times the two kinds of dumping —"exchange" dumping and the unconscious dumping—were bound up with one another. "Exchange" dumping often yielded very high paper profits. In our two examples the profit might have been made 200% of the normal gain and still have permitted a price cut of about 45% below the foreign price. The German exporter was thereby, in a certain sense, in a difficult position. Sometimes he was blamed for making high surcharges upon inland prices; many times he was disappointed at the underbidding and called for anti-dumping legislation. When dumping, regarded from an economic standpoint, seemed to amount to a dissipation of the country's labor and resources, government interference was resorted to.

However, the government did not for

[5] The increased ability to compete, which rose out of the mentioned sources, was in part very important. Two schematic computations for the end of 1920 will make this clear. The production of two commodities in foreign countries is compared with the production in Germany before and after the war. It is assumed that with both commodities in the pre-war period and with the production in Germany, there is a rise in price of 25% for the prices of raw materials, labor costs, general costs, and profit. In the first case the raw material for production in Germany is to be taken from abroad; in the second case, it is produced at home. For the foreign production the raw material is in both cases purchased abroad. It is further assumed that, as a result of the price increases through the war, the foreign producer has to pay, as contrasted with the pre-war time, double for

TABLE I. COMMODITY MANUFACTURED IN GERMANY OF FOREIGN RAW MATERIALS

PRE-WAR		AFTER THE WAR			
Elements of Cost	In Germany and Foreign Country	In Foreign Country in Foreign Currency	In Foreign Country in German Currency (10 times foreign standard)	In Germany in German Currency	In Germany in Foreign Currency (German currency divided by 10)
Raw material	25	×2 =50	500	25×2×10=500	50
Labor	25	×2 =50	500	25×4= 100	10
Overhead	25	×1½=37.5	375	25×3= 75	7.5
Profit	25	45.8	458	225	22.5
	100	183.3	1,833	900	90.0
			Difference 933=50.9%		
		Difference 93.3=50.9%			

was sought and a certain percentage of foreign currency) from the time of the

socio-political reasons take the step which would have been suitable and might have been effective, namely, to cease artificial cheapening of living costs and of production and thus in part to work toward the end that the whole costs of production should again be calculated properly and that labor power should again be fully paid. Instead of this, they sought by legislation to bring about the greatest difference between inland and export prices, in part by levying upon this difference an export premium to be used for socio-political purposes. Although supervision of exports had existed early in the war as well as later, it was placed under new regulations and organizations by the ordinance of December 20, 1919. In the main this control was to be accomplished through the Foreign Trade Office, preferably by self-governing bodies of the individual industries under the supervision of the Imperial Commissioner for Import and Export Licenses. In general, exportation could take place only with export licenses, which would be furnished only if the commodity was not badly needed for the satisfaction of domestic needs and, secondly, if the selling price was not too much below the prevailing foreign price. A control of prices was introduced for export which, as may be easily understood, was very difficult to administer. In many cases, if it did not deal with large quantities of goods, it passed over things altogether. At the outset, mark prices were permitted and exchange surcharges were fixed, which for the various purchasing countries were determined according to the depreciation which in this particular country the mark suffered in relation to the foreign currency. The differing price levels which developed led to intolerable conditions. Later a demand arose for price-fixing in a suitable foreign currency. Through this supervision at the same time the development of the greatest number of bills

raw materials and labor, 1½ times for overhead, while the profit as compared with pre-war times is reckoned at 1/3 of the total costs. In Germany the exchange rate has risen 10-fold, labor costs 4-fold, general costs 3-fold, and raw material which is to be brought from outside 20-fold, inland material on the contrary increased only 3-fold in value.

It is clear what enormous effect the assumed conditions, which for the particular time (end of 1920) were not extraordinary, exercised upon the competitive ability of German production. It operated that, as far as import Germany was concerned, German production enjoyed an exchange protection against foreign competition which no tariff had ever given to German production. In the first example, protection amounted to 104%; in the second, 450%.

TABLE II. PRODUCT MANUFACTURED IN GERMANY OF DOMESTIC RAW MATERIALS

PRE-WAR		AFTER THE WAR			
Elements of Cost	In Germany and Foreign Country	In Foreign Country in Foreign Currency	In Foreign Country in German Currency (10 times foreign standard)	In Germany in German Currency	In Germany in Foreign Currency (German currency divided by 10)
Raw material	25	×2 =50	500	25×3= 75	7·5
Labor	25	×2 =50	500	25×4=100	10.0
Overhead	25	×1½=37·5	375	25×3= 75	7·5
Profit	25	45·8	458	83·3	8.3
	100	183·3	1,833	333·3	33·3
			Difference 1,499·7=82.4%		
		Difference 150.0=83.4%			

dertook some hedging operations, be- certain limits—for instance, with

was sought and a certain percentage of those arising out of export transactions had to be sold to the Reichsbank. In this way the possibility was to be created of exercising a determining influence on the formation of exchange rates.

It was clear that such arrangements must seriously hinder export trade. Nevertheless, their educational influence was not to be underestimated at a time when trade and industry had not fully recognized the dissipation of resources which often followed through the relationship of domestic and foreign prices. But when the time came that, with the rapid approach of domestic and world prices and with the rise of expenses, the possibility of any important underbidding no longer existed and rather numerous export difficulties appeared, these arrangements had served their purpose. Through the declaration of May 19, 1923, intensive export control was withdrawn for the majority of export wares.

The stipulation that any export prices be quoted in foreign currencies was felt by trade in normal times to be a heavy burden. That meant, of course, that the exporter took the exchange risk. On the contrary, when domestic currency is subject to great fluctuation and eventually to depreciation, as was the case with the mark after the war, then the exchange risk becomes unimportant and the risk relating to the value of domestic currency—that is, "money-value risk"—becomes the most important.

The exchange risk, which obviously depends upon the sale or purchase in foreign currencies, exists in export from the moment of sale or from the time of the definite offer, to the moment of conversion into domestic currency, or in import from the time of purchase or (when the particular commodities are fully dependent in price determination upon the exchange rates of particular foreign currency) from the time of the sale of the imported ware in domestic currency to the procurement of the amount of foreign currency required for payment. To shift this risk it is possible, in so far as immediate purchase of foreign currencies can or ought not to be made for immediate deliveries, usually for the exporter to carry on exchange insurance transactions by the sale of foreign currency for future delivery or for the importer by purchase of future exchange. Thereby the exporter has assured himself of a definite return in domestic currency, the importer of a definite cost in domestic currency. Now, if the domestic currency is exposed to the danger of depreciation, the exporter will, in his attempt to escape the smaller risk of exchange fluctuation of foreign currencies, be subjected to the greater risk of domestic currency depreciation. The importer, on the other hand, may have the opportunity through assurance of his costs in domestic currency, in so far as he has not already sold the goods, of enjoying an increase in commodity prices as a result of money depreciation. He, therefore, places himself in a position as a speculator upon further depreciation. However, he is not able to sell his products without at the same time assuring himself of at least the amount of foreign currency owed for the goods. Up to the time of the sale, however, at least with commodities whose prices follow world markets, he is protected as to his debt in foreign currency by possession of the goods themselves.

It appears, therefore, that with money conditions as they have been in the past few years in Germany, no great need for exchange hedging or forward exchange has existed for exporters, at least when the sales were made in terms of a good foreign currency. Nevertheless, German exporters up to 1922 un-

dertook some hedging operations, because from time to time they feared a fall in foreign currencies. In the year 1922 this stopped. Business men were glad to have orders in foreign currencies; many times they wished to find ways to avoid turning these into domestic currency at all. For export merchants, risk ceased to exist in so far as it was finally possible to sell in foreign currencies; finally manufacturers would sell only in terms of good foreign currencies. As a whole, their business was carried on in foreign currency.

Domestic business sought to avoid the "money-value risk." During a greater portion of the post-war period, since the sellers as the possessors of wares have been in the stronger economic position, the most obvious course would have been also here to fix prices in foreign currencies. But official regulations prevented this. The government did not wish the mark to be further depreciated through its exclusion from use in the large part of the domestic commerce and prohibited on that account selling in foreign currencies, although certain exceptions were made. Other means had to be devised. One of these methods was the demand for payment in full or in large part in advance, in order to procure a definite amount of money before possible subsequent depreciation. The money received was then immediately spent for commodities. Of especial importance were the sales with "open" prices, a method which came into vogue for transactions with delayed deliveries, in which the seller, during the period between the contract and delivery, did not bind himself to a given mark price. The seller could not arbitrarily change the price, but could undertake changes which were justified by changes in circumstances. Prices could be adjusted with changes in given conditions within certain limits—for instance, with changes in wages or in raw-material prices. There were also the so-called "sliding-scale prices," which also even before the war had played a part in some branches of industry. To these belonged the prices which changed in proportion to the change in a certain index—for instance, the general wholesale price index or a given trade index—or with a given exchange rate, for instance, the rate for the dollar or for the Swiss franc. The latter has played in the past two years an important part; one spoke of price-fixing in "exchange-secured" marks. It was determined by agreement which exchange rate was to be used as a basis—whether the exchange rate on the date of delivery, or of payment, or of receipt of payment, or some other day. The price on the day of sale was converted into foreign currency and then re-converted into paper marks at the new rate. The operation was the same as if one had sold directly in foreign currency, with the condition of payment at the rate of some later date. Finally this mask was allowed to fall and from the summer of 1923 on, sales were made in stable foreign currencies and, in so far as payment in foreign currency was not permitted or prohibitions were not evaded, with the condition of payment in paper marks at the going rate on an agreed date. The customary date was shoved further and further from the day of sale. Finally it became preferably either the date of remittance, or even oftener, the date of receipt of payment or the first or second day before; eventually, because of the difficulty of securing foreign exchange, the earliest date when the seller could secure conversion of the amount received into foreign currency. In the last months of 1923 gold-mark prices became more common, at first

trade, still lagged in price adjustment

with the condition of payment in paper marks, later also with the condition of payment in any domestic stable means of payment. In this way, sellers also in domestic trade escaped from "money-value risk" into "exchange" risk, although this was also limited either by fixing a given minimum rate or by taking improvements in the position of the mark less fully into account than reverses. Ultimately a large part was played in domestic trade by the development of *risk premiums,* which were added to prices because of the "money-value" risks. Primarily this happened with mark prices upon commodities which were not exchange-insured, particularly in the hands of those who as the economically weakest of business men were loaded with the greatest risk. This risk premium was included also in prices quoted in stable currencies or in exchange-insured marks, the occasion therefor being the difficulty which the seller experienced in procuring the foreign currency needed for his business with the marks which he received; for instance, for the purchase of raw materials in foreign countries. One began to speak of a *Repartierungs* risk, because one did not know when and at what rates the exchange offered for sale or purchase might be taken, since the Reichsbank had to apportion its total purchases of exchange, only a fraction of the total amount offered daily.

X

Unusual as it seems at first thought, the utter collapse of the mark led to an elimination of some unsound characteristics of German economic life, which were to be traced back to the currency fluctuations. The difference between domestic and foreign exchange values of the mark disappeared almost entirely. Faith in the ultimate improvement of the mark was destroyed. The mark is no longer effective as a measure of value. Wages and salaries were finally paid twice and even oftener during the week; and, as mentioned above, without further negotiations with representatives of the employers, the cost-of-living index was made the basis for determining the amount to be paid in paper marks, in so far as gold wages and salaries had not already been agreed upon. This made the costs of business keep pace more directly with the current money depreciation. The insurance methods referred to above contributed greatly to this, because prices began to adjust themselves most rapidly to changes in exchange quotations. Finally each little grocer in each little village began to reckon daily with the course of dollar exchange in mind, since he knew that he must pay such amounts to the manufacturer or wholesaler and therefore must demand a corresponding price from his purchasers. Many of these retailers marked their prices in the late summer of 1923 in gold marks and reckoned the gold mark as 10/42 of the dollar rate. Even during the first collapse of the money value there was thus again a stable measure for price fixation, namely, the dollar. The result was a most rapid approach of such domestic prices to world-market prices as had not previously caught up. Because of the risk premiums, which were often added to prices in large amounts, domestic prices frequently went beyond foreign prices. The elimination of the remains of government regulation contributed to this leveling-up of prices. The great increase in bread prices, which was found when the last regulations were removed, affected severely the costs of living and therefore wages and prices. Furthermore, the complete adjustment of rail-

November 30, 1923, to 1,431 on Janu- times are nominal wages for which

way freight rates to the current depreciation brought about important increases to which must be added also the large increase in coal prices, which were temporarily above world-market prices. Only the cheap rents yielded an important cheapening factor for the cost of living, and thereby indirectly for commercial and industrial enterprises, which also in part profited directly as renters.

An important advance in domestic prices above foreign prices took place especially in the first weeks of stabilization of exchange rates in Germany. Stabilization was first more or less normal through the quotations of the Reichsbank, from which of course one could procure only a decreasingly small proportion of the requirements for foreign currency. As foreign countries appraised the mark continually at lower levels, an illegitimate trade in German bills of exchange not appropriated by the government set in. A dollar, which in the Reichsbank since November 20, 1923, was maintained at 4.2 trillion marks, has been quoted in this outside traffic at times up to 12 trillion marks. In this transitional period, commerce had adjusted itself in fixing paper-mark prices, not to official rates as they have been quoted in Germany but to the rates as quoted in foreign countries and occupied territories. This gives rise naturally to a level of prices which, compared with prices abroad, are much higher than if they are computed on the basis of the official rates. As the exchange quotations abroad at the beginning of December last were adjusted to the official German rates with comparative rapidity, German commodity prices did not decline in equal measure. There were even further price increases, because many commodities and wares of commerce, particularly in the retail trade, still lagged in price adjustment and needed further advances. Furthermore, in spite of the stabilization of value, the risk premium included in prices did not disappear immediately. In part, differences were made depending upon whether the payment was made in stable-value means of payment, such as the "Rentenmark," dollar certificates, gold loans, or in paper marks. In the first instance a rebate was given because through this means of payment the risk was practically excluded, which was not the case with payment in paper marks. Commerce had become too much accustomed to higher prices and to continued price increases to be ready to change its prices correspondingly with new currency conditions, particularly since it was still uncertain how long the stabilization would last.

The economic crisis, in which Germany suffered as a result of the Ruhr occupation and the almost complete cessation of trade and commerce with the unoccupied areas, found a support in the price level of commodities. Furthermore, the purchasing power of a large portion of the population had been reduced severely. Government employees of country and community received a hardly sufficient minimum income, because of the need of keeping down public expenses and avoiding further inflation of currency. Outside of this, there were many unemployed and occasional laborers who had entirely insufficient incomes. With the cessation of trade with abroad because of the relatively too high German prices, a stoppage of domestic trade could not but result. The stabilization crisis now offered doubtful hope.

In any case, prices had to be brought down. This happened, though not in any great measure at first. The wholesale price index declined from 1,650 on

duction of their sales (many establish- man manufacture, competitive ability in

November 29, 1923, to 1,431 on January 31, 1924 (since this time it has again risen to 1,519 on May 1, 1924). The retail index for 10 necessities of life declined from 2,390 on November 29, 1923, to 1,427 on January 31, 1924, and to 1,272 on April 3, 1924. The cost-of-living index of the Imperial Statistical Office, which stood at 1,535 on November 26, 1923, on February 11, 1924, amounted to 1,030. All of these figures are to be understood as trillion marks for one mark in peace times; or, since a trillion paper marks are equivalent to a gold mark, or Rentenmark, as gold marks for one pre-war mark. Even if we take into account the fact that the cost of living, since February 11, has again advanced, we must recall that, according to the method of calculation of the Imperial Statistical Office, the cost of living is only a little higher than before the war, as contrasted with the increase of 60% to 70% in gold figures in those countries whose money values have been more or less fully maintained. A cheapening factor, as mentioned above, lies chiefly in the rents but also in part in the prices for certain domestic commodities, which stand under the world-market level, even below the pre-war prices, as, for example, grains. This relatively low level of living costs still makes possible lower wages than have prevailed in countries with higher value currencies. Actually, in times of greatest demand, German wages have been considerably lower than the wages of stable-currency countries. The *Wirtschaftskurve* for December 15, 1923, computed a wage index for the average branches, which gave a figure of 30% above peace levels. However, the wage developments since the armistice have varied in the different branches of industry. Side by side with many instances of higher wages than in peace times are nominal wages for which the real wage signifies a lower standard of living than before the war. Attempts were made to exploit the economic crisis by depressing wages to still lower levels. The wage index mentioned above was reduced, then, from 130 to 117 on January 15, 1924. At the same time, efforts were made to increase the working time of the individual workers. The result was not great, but still not insignificant. Above all, attempts have been made to remove from establishments certain labor costs through rationalization of plant organization and through discharge of all the dispensable labor. Many establishments, particularly banks, had acquired during the inflation period much unproductive labor; other types of establishments had increased their personnel beyond reasonable needs.

XI

To judge the present state of German manufacture in international competition, one must consider that the German manufacturing industry even today enjoys certain cheapening forces as contrasted with production in higher exchange-value lands; that, on the other hand, there are certain factors which increase costs. In the direction of lower costs, which are significant in a measure also for manufacturers, come the lower rents for factories and salesrooms, the lower wage rates and, in so far as domestic raw materials are used, prices which are lower than world market. The great advantages of low coal prices and low freights have ceased. In the direction of higher costs there are certain taxes, particularly the sales tax, which operate directly to increase prices; the high quotas of general overhead, with which the majority of establishments are burdened because of the re-

duction of their sales (many establishments are operating at 20% of normal capacity); the costs for unproductive labor, which must be borne as a consequence of money conditions and of the unusual conditions of state finances but which with continued stabilization will be lessened and which in part have already been reduced considerably; higher bank charges; above all, an unusually high rate of interest which results from the lack of capital in Germany, which will undoubtedly long be above the pre-war figure; and, finally, of special importance as contrasted with pre-war times, the lessened efficiency of labor in many branches, though not in all.

It is certain that German industry enjoys no more an export premium worthy of mention, arising from the collapse of currency. Currency dumping comes no more into consideration. Rather in number of branches of German manufacture, competitive ability in international commerce has been much decreased, in many respects destroyed. It will be difficult for many entrepreneurs to win back their competitive ability or to increase it. The difficulties under which German industry now operates will probably bring improvements, partly in the way of decrease of expenses but more especially there is a probability that the efficiency of German labor will again return to the pre-war figure. But there is, of course, the possibility that growing out of the reparations there will be an increase of taxation or a special imposition upon industry for industrial loan, perhaps also increased service. Much depends upon whether German industry can secure sufficient export capacity, which is a condition for the ability of the German people to fulfil the obligations of the reparations agreement.

CHANGES IN FINANCIAL STRUCTURE, AND FINANCING OPERATIONS OF RAILROADS, SINCE 1913

By F. ERNEST RICHTER AND GEORGE A. BOYD

THE purposes of this article are to set forth the principal changes which have occurred in the capitalization of American railroads between 1913 and 1923, and the general character of the financing done in that decade, and to examine into the assumption sometimes made that because the railroads have not raised much new money by stock issues during the decade, they therefore are confronted with a burden of debt, relatively as well as absolutely much heavier than that of 10 years ago. The article will indicate and analyze the changes in structure brought about by new financing, reorganizations, and other factors, and will analyze the statistics of public offerings of railroad securities from 1914 to 1923, inclusive.

Summary of Conclusions

The relative proportions of capital stock and funded debt of the railroads of the United States as a whole at the end of 1923 were very little different from those on June 30, 1913. The reason for this cannot be found primarily in the means by which railroads secured "new money" through financing during that period. Railroad securities offered to the public through the usual investment channels during the past decade consisted almost entirely of bonds and notes. For the railroads of the United States as a whole, the ratio of capital stock to total capital obligations was prevented from sinking to lower levels chiefly through reorganizations, and to a lesser extent by stock dividends and bond conversions, and by the obvious fact that some of the financing by bond or note issues did not increase indebtedness but merely refunded maturing debt.

Relative Proportions of Capital Stock and Funded Debt

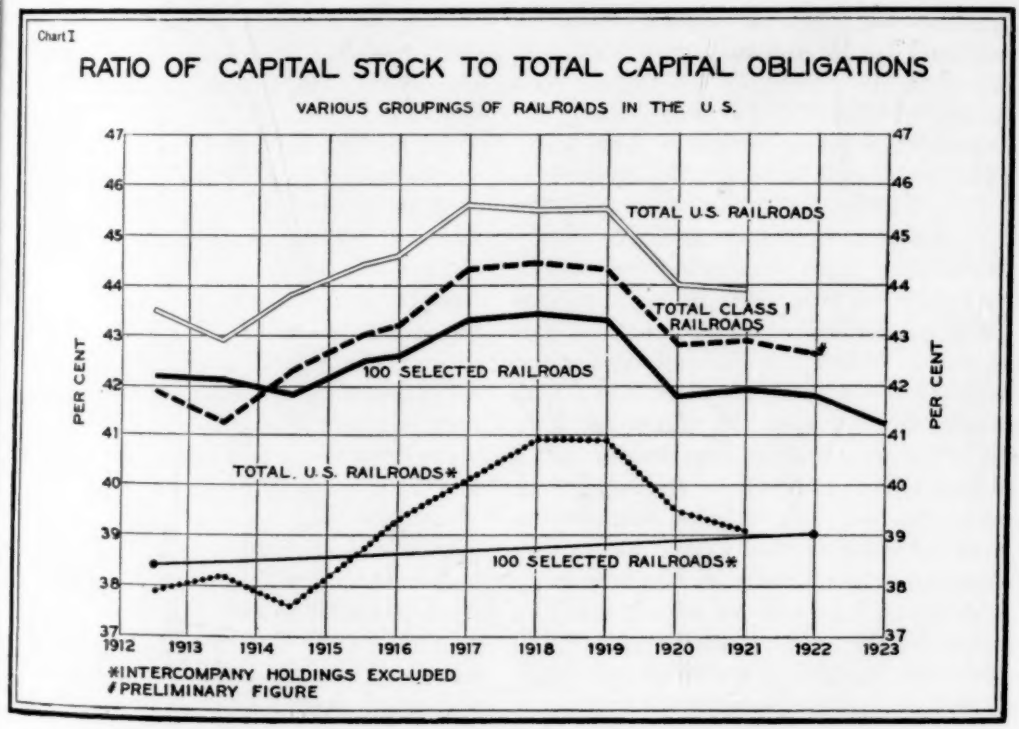
The relationship between the capital stock and funded debt of the railroads of the United States is set forth annually in the reports of the Interstate Commerce Commission. It was desired, however, not only to deal with totals but also to analyze specific classes of roads, arranged either geographically or according to the chief commodity transported, a thing not done by the Commission. Furthermore, more recent figures were desired than any available from official sources. For these reasons it was necessary to choose a list of representative roads, whose aggregate capitalization was not very different in amount or character from that of the railroads as a whole.

Before choosing the individual carriers to be studied in the analysis, it was observed that the railroads of the country, with few exceptions, may be classified in eight groups: New England roads, eastern trunk lines and their sub-

sidiaries, coal carriers, railroads operating throughout the southern states, lines centrally located north of the Ohio River and not falling in the trunk line or coaler class, grangers, transcontinentals, and southwestern roads. One hundred of the most important Class I railroads, that is, roads having an annual operating revenue of over $1,000,000, were selected and allocated to these eight groups. The carriers selected represent approximately 87% of all Class I mileage in existence. The remaining 13% includes corporations excluded from this study because of their small size or by reason of special circumstances. The Bessemer and Lake Erie Railroad, for example, is owned by the United States Steel Corporation, a fact which, with others, operates to keep the amount of its capital stock at a low figure.

Leased lines are not considered by the Interstate Commerce Commission as Class I roads, since they have no operating revenues. Consequently, they have been omitted in the present study, except in instances where a reorganization has involved the consolidation of a Class I carrier with several of its lessees, as was the case in 1919 with the Boston and Maine. Here the figures for seven leased lines from 1913 to 1918 were combined with the statistics of the Boston and Maine to afford a basis of comparison with recent years. The general inclusion of roads operated under lease would have had only a slight effect upon the results obtained by using Class I carriers alone. The percentage of stock to total capitalization of leased lines averages only a little above that for all Class I roads, and tends to increase slowly as funded debt matures.

In compiling the figures for the cap-



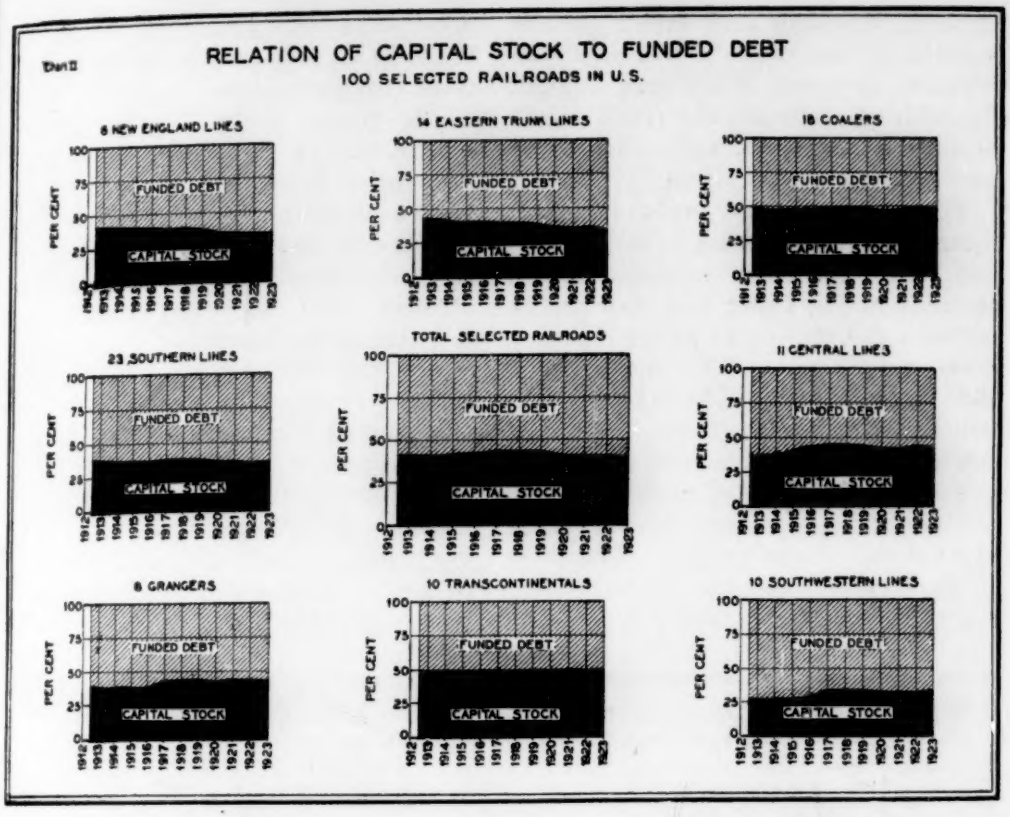
ital stock and funded debt of the 100 selected roads, certain methods were followed which offhand might seem likely to introduce a substantial margin of error into the results. Although securities held in the treasury of the issuing corporation have been excluded from consideration so far as possible, intercompany holdings among the roads in question have not been eliminated, except in two years for checking purposes, as will be explained later. In the comparatively few cases in which a road has been reorganized since 1913 and is now composed of several formerly distinct lines, the capital obligations of the several lines before the reorganization have been taken into consideration in comparing the financial structure of the road in 1923 with that in 1913.

Despite these chances for error, the resulting figures seem to reflect fairly the true situation. The curves on Chart I show the ratio of capital stock to total capital obligations for various combinations of railroads in the United States at the end of each fiscal year represented on the chart. The fiscal year, as is well known, was changed in 1916. The heavy curve representing the 100 selected roads does not differ widely from the three other curves, which were plotted from data given in the reports of the Interstate Commerce Commission. The chart also shows, for the end of the two fiscal years 1913 and 1922, the status of the 100 roads with intercompany holdings excluded. The differences in percentage are small and, furthermore, are relatively unimportant for the purposes of this study. The trend over the decade is, however, very important. It will be noted that the curve of the 100 selected roads is the only one to exhibit a downward trend, however slight, throughout the period. The Interstate Commerce Commission statistics show for the period through 1921, the latest date for which these statistics are available, a very slight improvement in the proportion of stock to interest-bearing obligations. The largest discrepancy between the various curves occurs before the end of 1916. All curves reflect the fall in the ratio of capital stock to obligations which set in early in 1920.

It would seem, therefore, that the statistics used in this study err slightly in the direction of exaggerating the proportion of debt to total capitalization. For all practical purposes, it may be said that the relative proportions of railroad stock and funded debt were almost the same at the end of 1923 as in the middle of 1913.

100 Selected Railroads

Enough has just been said to obviate any necessity for describing the central panel of Chart II. When the 100 chosen roads are allocated to their respective territories, however, and the 8 bordering charts drawn, it is interesting to note the differing characteristics of each of the 8 groups of roads. The ratio of capital stock to total capital obligations of the New England lines has almost steadily declined throughout the past 10 years, this ratio having dropped from 42.1% on June 30, 1913, to 35.3% on December 31, 1923. The eastern trunk lines have suffered a still more drastic decline, the percentages in this case being 43.0% and 34.7%, respectively. The coalers are a rather prosperous class, and, as is well known, it has not been necessary for them to load themselves down with an undue proportion of interest-bearing obligations. Their proportion of stock has remained around 48%, save during the



period immediately following the reorganization of the Wheeling and Lake Erie Railway and the issuance of preferred stock by the Western Maryland Railway in 1917.

The carriers operating in the southern states have undergone a very gradual decline in the ratio of stock outstanding, the figures being 38.3% in 1913 and 36.0% in 1923. The central lines, grangers, and southwestern roads have, as groups, increased the ratios of their capital stock to debt, mainly through reorganizations. These will be discussed in connection with succeeding charts.

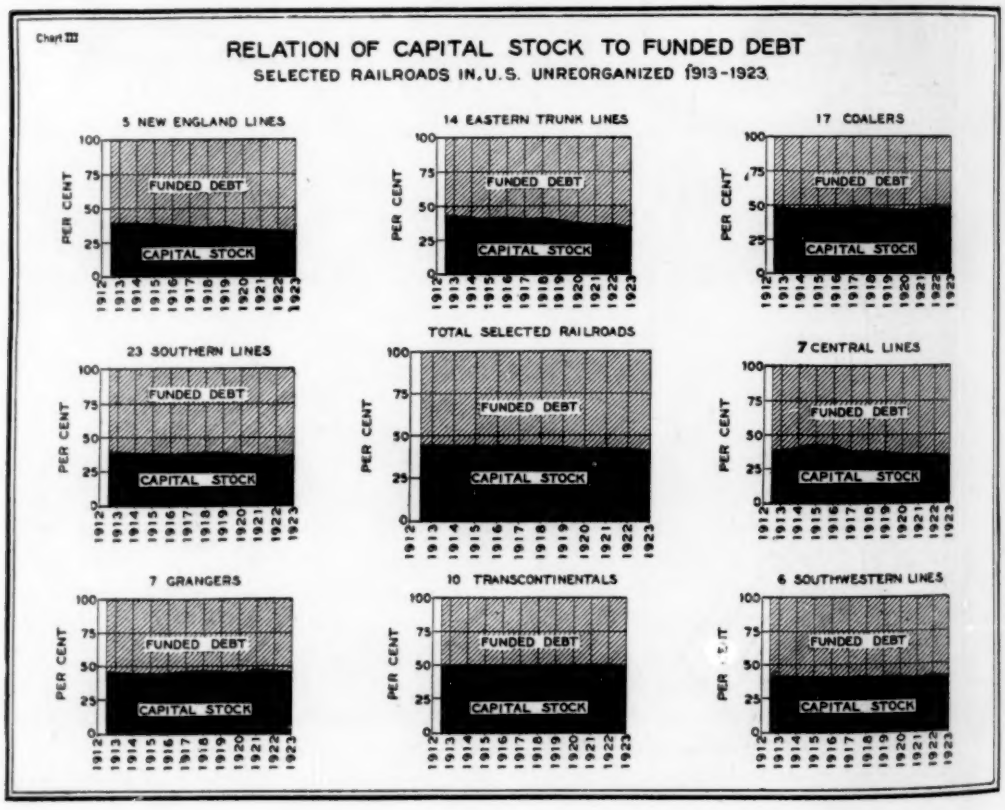
The transcontinentals may be called the banner group west of the Alleghenies. Their proportion of capital stock, always high relative to that of the other groups, increased throughout the years included in this study until in 1921 it amounted to 50.6%. There has since been a slight falling off in this figure. The increase prior to 1922 was brought about in large measure through the conversion of bonds of the Atchison, Topeka and Santa Fe and the Southern Pacific companies into stock.

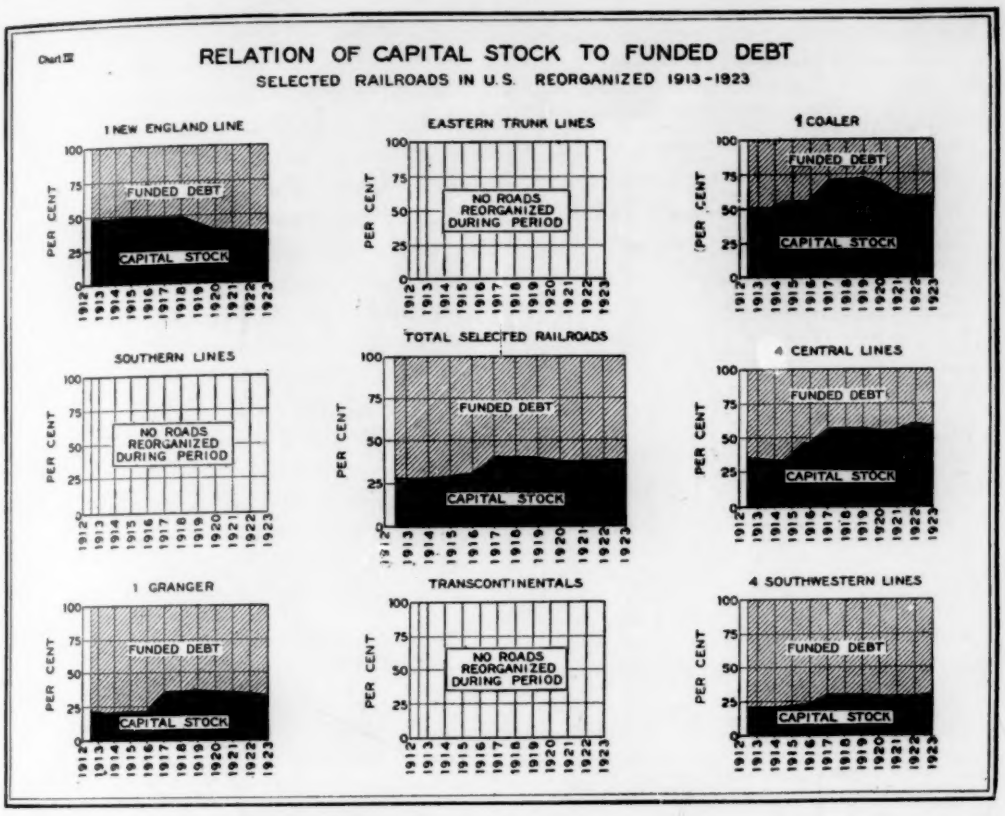
Aside from the creation of the New York Central Railroad Company, which was formed by a merger of the New York Central and Hudson River Railroad Company and other organizations, and the recent consolidation of the Nickel Plate, Clover Leaf, and Lake Erie and Western railroads, 11 of the 100 representative railways have undergone reorganization since the middle of 1913. Since the usual pro-

ceedings attending such events involve a more or less radical revision of the financial structure, it has been thought desirable to ascertain the trend in the proportions of stock and debt of the unreorganized roads alone.

With reorganized roads excluded, there is a distinct decline in the proportion of capital stock, as shown in the central panel of Chart III. For the 89 carriers, this decline in 10½ years was from 44.5% to 41.6%; not a large change, to be sure. The graphs representing the eastern trunk lines, the southern lines, and the transcontinentals are duplications of those on Chart II, no reorganizations having taken place within those groups. The New England roads and the coalers, after the exclusion of one carrier from each, present the same general appearance as in Chart II, save that the proportion of stock is slightly lower.

The central group of carriers, once such roads as the Wabash and Pere Marquette have been eliminated, exhibit a marked decline, rather than an advance, in the ratio of capital stock to total capital obligations, a decline arrested until 1917 by a temporary decrease in the amount of Illinois Central bonds held by the public. The grain-carrying roads, even without the reorganized Rock Island, maintained a slight upward trend prior to 1922, mainly owing to the public offering of Chicago and North Western stock in 1917 and the Burlington stock dividend in 1921. The unreorganized carriers operating in the Southwest have allowed

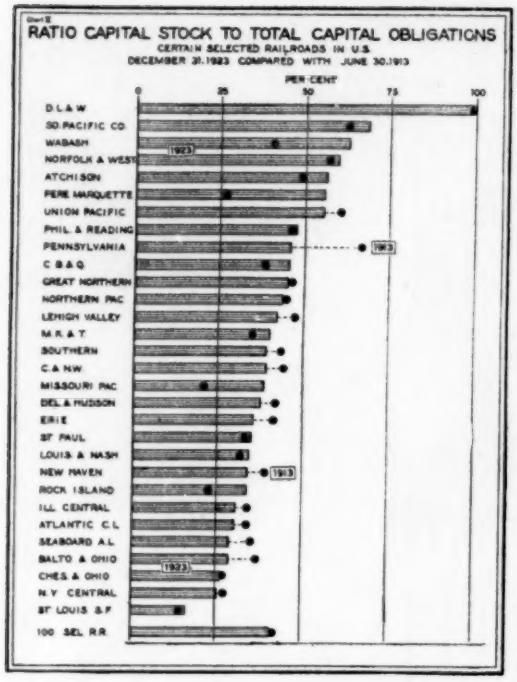




their financial structures to stand virtually unchanged during the past decade, save for a trifling increase in the funded debt of two small roads in 1921, which was canceled by maturities in the following year.

Chart IV does not compare in importance and interest with those preceding, but is inserted to complete the story. Since the more important reorganizations were consummated in 1917, the improvement in capital structure for all 11 roads combined is most evident in that year. Contrary to the usual rule, the Boston and Maine Railroad, the status of which is exhibited in the upper left-hand graph, increased its funded debt upon reorganization through the issuance to the United States Government of bonds in payment for a cash advance. However, the cash received was used to reduce interest-bearing obligations classed as current liabilities. The circumstances of the reorganization were unusual, in that numerous leased lines were consolidated with the parent company. Stockholders of the former received in exchange for their holdings an equal amount at par of new Boston and Maine preferred stock. As explained heretofore, the leased roads were taken into consideration in compiling the statistics for the years 1913-1918, which form the basis of the graph.

The one coal road reorganized was the Wheeling and Lake Erie in 1917, but the full benefit of reorganization was not retained, for it was soon found necessary to issue notes. On the graph representing the central lines, it is easy



to trace the effects of the Wabash, the Pere Marquette, and the Chicago and Eastern Illinois reorganizations in 1915, 1917, and 1922, respectively. The improvement of the Rock Island's financial structure is evident in the lower left-hand chart.

The graph showing the status of the southwestern roads is at first sight somewhat surprising. In spite of the fact that such large and important carriers as the Missouri Pacific, the St. Louis–San Francisco, and the Missouri–Kansas–Texas underwent reorganization, the ratio of stock to total capital obligations was not greatly improved. However, the credit position of these three roads was such that it was difficult to do more than was actually accomplished toward improving the financial structure. The extraordinarily low ratio of capital stock of the roads, prior to reorganization, itself points an obvious moral.

Status of Individual Roads

After having viewed the situation as a whole, it may be interesting to note the position of a few individual carriers. Chart V exhibits graphically the ratio of capital stock to total capital obligations for 30 of the more widely known railroads, on June 30, 1913, and December 31, 1923. In a very few cases, such as those of the St. Louis–San Francisco and the Missouri–Kansas–Texas, the ratio given represents the status of a good part of the systems operated by those roads. The justification for this procedure lies in the fact, as stated by the St. Louis–San Francisco Railway Company, that "the small roads are practically merged in the main road, but for legal reasons separate corporate existences are maintained." In the vast majority of cases, the ratio depicted represents the position of the single corporation operating under the name cited, except that the 1913 figures for the New York Central, the Missouri Pacific, and the Boston and Maine were, respectively, obtained by combining the New York Central and Hudson River with the Lake Shore and Michigan Southern, the old Missouri Pacific with the Iron Mountain, and the old Boston and Maine with its leased lines, in order to put 1913 and 1923 on a comparable basis. The roads are arranged according to their ratios in 1923. It is by no means true that all the prosperous roads are at the top of the chart, or all the weak ones at the bottom.

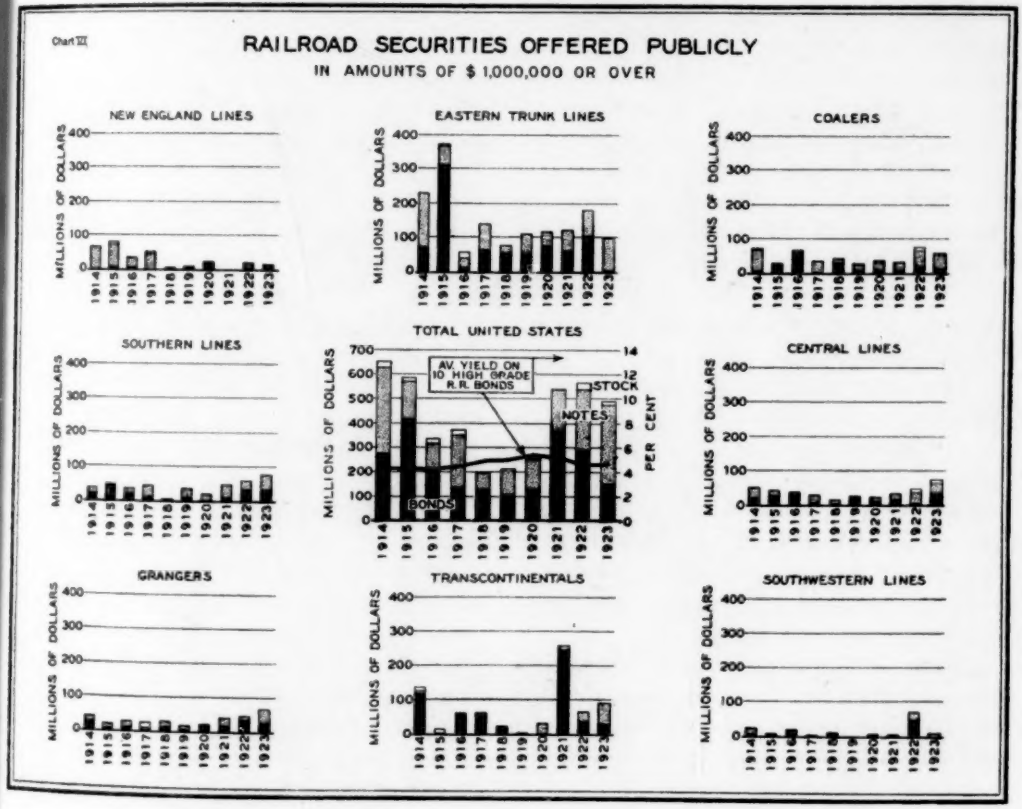
Fourteen of the 30 selected railroads have bettered their position since 1913, the greatest improvement having been recorded by the Pere Marquette. The largest decline in the ratio of stock to total capital has been in the case of the

Pennsylvania Railroad. The Delaware, Lackawanna and Western is in an enviable position at the top of the list with but $320,000 in bonds carried as funded debt, while the St. Louis–San Francisco occupies a place at the foot. One of the most interesting features of this chart is the position of the New York Central, with barely 25% of its obligations in the form of capital stock, a situation which emphasizes the importance to this road of the recent stock issue. This issue was sold in January of this year, and hence did not enter into the calculation of the December, 1923, ratio. The stock dividends of the Burlington and the Louisville and Nashville, and the conversions of Santa Fe and Southern Pacific bonds into stock, are reflected in the chart.

New Security Flotations

The principal cause of changes in capital structure is, of course, the flotation of new securities. It is the purpose of this section to analyze the new securities offered to the public by the railroads from 1914 to date without, for the moment, eliminating refunding operations. In the concluding main section, all causes tending to change the financial structure will be summarized and their respective influences appraised.

Chart VI sets forth by calendar years the total amount of railroad securities offered publicly in amounts of $1,000,000 or above since January 1, 1914. Actually, very few carriers are represented other than those comprising the



list of 100 roads which form the basis of this study. A number of terminal companies, however, are included and a few of the terminal issues were important in size, notably a $30,000,000 first mortgage issue by the Chicago Union Station Company in 1916, a $10,000,000 issue by the same company in 1920, a $12,000,000 offering by the Cleveland Union Terminal Company in 1922, and two large offerings of other companies made during the autumn of 1923. The chart, therefore, does not cover the same ground as the other charts accompanying this article, not only for the reasons just given but for others, the principal of which is the fact that the railroads took up on their balance sheets of 1920 over $300,000,000 of equipment trusts turned over to the United States Government in that year, and this increase in indebtedness is shown in previous charts for 1920, whereas on Chart VI such of these issues as were later sold by the United States Treasury to the public do not appear until 1921, 1922, and 1923. Furthermore, the other large loans by the government to the railroads, authorized by the Transportation Act of 1920, which also appear in the 1920 balance sheets, are not, of course, shown among the public offerings.

The first thing to be noticed upon glancing at the center panel on Chart VI is the small amount of capital stock offered for public subscription throughout the period under review. The largest of all railroad stock issues offered for public subscription during this period of time was the $19,000,000 Great Northern issue of 1914.

Upon the central diagram there has been plotted the average annual yield on 10 high-grade railroad bonds. It will be noticed that while the yield was relatively low in 1914, 1915, and 1916, a large number of bonds was issued. The huge volume of notes in 1914 was an aftermath of a sharp rise in bond yields during 1913, not shown on the chart. As soon as the yield on bonds began to rise in 1917, the amount of bonds sold decreased while that of notes rose. The steadily advancing interest rates and other factors kept the volume of bond offerings down for the next three years, while notes were also sparingly issued, at first because of the desire of the United States Government to leave the field free for the Liberty Loan flotations and then pending the agreements described in the following paragraphs.

Loans from United States Government

The relations between the railroads and the United States Government deserve mention at this juncture because of their effect on 1921 and 1922 note offerings. During the period of federal control from January 1, 1918, to February 29, 1920, and later under the Transportation Act, the United States Treasury made large advances to the carriers on account of additions to capital, for refunding, and for other purposes. As a means of repayment, the Transportation Act of 1920 provided in part that the net indebtedness of each carrier to the United States for additions or betterments made during the federal control period might be funded for 10 years or less at 6%, dating from March 1, 1920. The act also set up a revolving fund of $300,000,000 from which loans could be made to the railroads at 6% interest for a term not to exceed 5 years, for the purpose of tiding the carriers over the transition period following the termination of federal control. As a result of these and other provisions, the United States

Treasury acquired a large number of railroad securities. By the middle of 1921 outstanding loans from the revolving fund amounted to $200,000,000, a figure which has remained fairly constant up to the present time, while other obligations secured by collateral amounted to nearly $90,000,000 and eventually increased to over $230,000,000. The War Finance Corporation also aided in the financing during federal control.

Our chief interest, however, lies in the very large volume of equipment trust notes which had come into the possession of the Treasury through the equipment trust agreements of January 15, 1920. These agreements arose from the fact that the United States Railroad Administration during its existence had ordered approximately $323,000,000 worth of new rolling stock for use on the roads. It was agreed that notes were to be dated January 15, 1920, and issued to the government as equipment was delivered to the roads.

Financing since 1921

Beginning late in 1921, the Federal Government began to sell its holdings of equipment trusts, which amounted in all to $346,556,750, and up to May 12, 1924, had disposed of all but $21,261,500 of these. This is the major factor in the increased note offerings of 1921 and 1922, as shown on the chart. The bond financing in the same years owes its volume in part to the decline in bond yields and in part to refunding requirements of the transcontinentals. The year 1923 saw few sales of government-owned equipment trusts. Nevertheless this convenient form of security continued to be issued by the railroads in increasing amounts, while with the halt in the decline of interest rates, bond issues became more infrequent.

Offerings during the first half of 1924 have not been plotted on the chart. However, it is interesting to note that bonds constituted about 50% of total new railroad financing from January through June of this year, as opposed to 31% for all of last year, a thing not to be wondered at when the low interest rates of the spring of 1924 are borne in mind. Should the volume of railroad flotations continue to be as large in the second half of the year as in the first, the total of 1914 would be far surpassed. The year 1924 began auspiciously with the largest railroad stock issue in a decade, that of the New York Central Railroad, alluded to above.

Turning now to the diagrams representing the 8 classes of roads, it is evident that the 4 eastern trunk lines and their subsidiaries are in the lead as regards new financing. The unusual bond peak in 1915 represents principally the flotation of some very large issues, notably $100,000,000 convertible debenture 6s of the New York Central and 2 issues of the Pennsylvania totaling $114,000,000.

The New England lines have done little financing since the war, their flotations prior to 1918 consisting almost entirely of notes. On the other hand, the transcontinentals issued practically no notes at all until their participation in the equipment trust agreements of 1920. The flotation of bonds by the transcontinental carriers has been in highly irregular amounts, year by year. The large volume in 1921 is, of course, due to the sale of $230,000,000 Northern Pacific–Great Northern joint 15-year 6½s, Northern Pacific 6s, and Great Northern 7s.

The southwestern carriers have

raised little new money except in the year 1922, when some small bond issues were sold. The other groups call for no special comment.

Financing Analyzed by Security Types

It is of interest to note the various types of funded obligations which have been put out by the railroads during the period under review. Inasmuch as there have been only about a dozen public offerings of stock, the division between preferred and common stock is of little significance and may be ignored here.

The following table sets forth by years the number of bond and note issues of $1,000,000 or above which have been sold in the investment market by the railroads of the United States since January 1, 1914, divided into 3 types of bonds and 2 classes of notes. In allocating a particular bond to the first or second lien group, the length of line upon which the bond is secured by first, second, and later liens has been taken into consideration. Thus, a bond secured by a first mortgage on 1,000 miles of road and by a second or third lien on 4,000 miles of important trackage has been denominated a junior security.

The table shows a natural decline in the number of issues of bonds which are primarily first mortgages. The last year in which the number of offerings of first mortgage bond issues exceeded the number of issues of bonds of all other classes combined was 1917. The collateral trust bonds and debentures have been comparatively few in number, tending to be most numerous in periods of high interest rates; the distinction between such bonds, and notes secured by collateral, is often vague. Notes of the type just mentioned have, however, diminished markedly in number contemporaneously with the growing importance of financing by means of equipment trust certificates.

Possibilities for Stock Financing

In view of the small amount of stock offered to the public during the period under consideration, it is of interest to note how much of the total railroad

RAILROAD FUNDED DEBT ISSUES, 1914-1924

Year	Bonds			Notes	
	First Lien Securities	Junior Lien Securities	Collateral Trusts and Debentures	Collateral Notes	Equipment Trusts
1914	23	11	2	30	13
1915	14	10	5	16	2
1916	21	4	2	10	13
1917	10	5	1	17	14
1918	3	4	3	5	7
1919	6	5	7	7	5
1920	5	1	4	7	9
1921	7	5	5	3	36
1922	6	12	3	0	47
1923	6	9	0	4	47
1924 (6 months)	8	14	0	9	22

financing since January 1, 1914, could conceivably have been accomplished by means of common or capital stock issues. In doing this there is no intention of intimating that a policy of stock financing should have been pursued wherever possible to the exclusion of bond and note issues. Such a policy would have ignored economic considerations of the highest importance. Nevertheless, the theoretical possibilities may be set forth.

Two basic assumptions have been made: one, that new common stock could not and would not be sold unless outstanding common stock were selling above par; and the other, that no road, whose common stock was completely owned by one or more other railroads, would resort to common-stock financing. Judged solely by these criteria, 19 of the 100 representative roads were in a position to make a public stock offering at some time during 1914. This number was increased to 23 in 1915. Then followed a decline, which became abrupt in 1918, and in 1921 the common or capital stocks of only 9 carriers were selling far enough above par to have presumably enabled them to issue new stock. In 1923 the number was fifteen.

A theoretical maximum for new common-stock flotations in each year was roughly determined by taking the ratio of all securities issued by carriers in a position to do stock financing in that year to the total amount of railroad securities floated, other than the equipment trust certificates issued under the agreements of January 15, 1920. The annual ratios figure out approximately as follows:

1914	21%
1915	49
1916	28
1917	52
1918	40
1919	12%
1920	28
1921	12
1922	10
1923	36

Even allowing for the fact that these figures represent at best approximations, that they do not take into account such intangible factors as technical stock market conditions, and that they take no account of the fact that a stock sale in one year might lessen or even eliminate the chances of making a successful stock sale in the following year, it is evident that a substantial though a minor part of the financing by the issuance of obligations rather than of common stock has been by choice rather than by necessity, dictated by stock market conditions. It will at once be objected that this has resulted from the income sheet quite as much as from stock-market conditions. To a certain, unmeasurable extent this has been true. On the other hand, it may be observed that doubtless neither poor income sheets nor poor balance sheets have impelled the Burlington to refrain from offering stock to the public, or the Louisville and Nashville in 1923 to declare a stock dividend which, by bringing the price of the stock below par, eliminated that road for the time being from a list of possible issuers of common stock for raising new capital, or the Santa Fe to keep the dividend on its common stock at such a conservative rate that the stock has not often in recent years sold much above par. This is not to criticize in any way the judgment or policies of these or other roads; it is merely to call attention to certain facts and conditions.

Furthermore, there is the whole question of financing by issues of preferred stock, so popular recently in the public utility field. The Chesapeake and Ohio

issued preferred stock in 1922 when the common was selling considerably below par. The Illinois Central on two occasions during the past two years has sold 6% preferred stock at par. The Bangor and Aroostook put out preferred stock when its common was held almost entirely by another corporation and was therefore not quoted on any stock exchange. In a number of cases that will readily come to mind, such as the conspicuous instances of the Santa Fe, the Union Pacific, and the Baltimore and Ohio, there are already outstanding preferred stocks with low dividend rates which are heritages from reorganizations of the '90s. For some of these roads and for other roads, like the Erie, which pay no dividend whatever on existing preferred stocks, financing by the use of this medium is presumably out of the question. For some of our foremost roads, however, it seems an available means of raising money, the advantage of which, in keeping down the relative burden of fixed charges on obligations, must be weighed against the disadvantage of the somewhat higher cost of money as compared with money raised by bond issues. Again, no judgment is passed on the failure of more railroads to finance by means of preferred stock; it is desired once more simply to advert to certain significant facts and conditions which might bear on conclusions drawn from mere statistical data. We pass by entirely the possibilities of financing by no-par common stock.

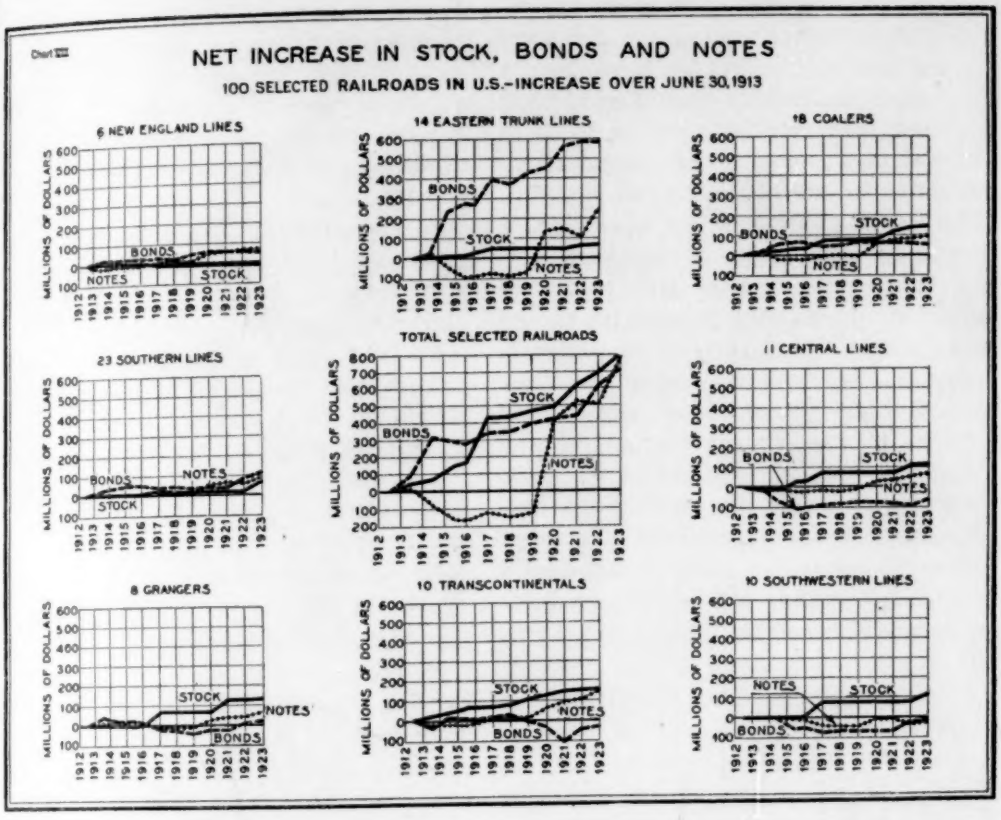
Summary of Factors Involving Changes in Financial Structure

It is now time to collate the various causes operating to change financial structure, the result of whose action was depicted in the earlier charts accompanying this study. This can best be accomplished by an explanation of Chart VII, which illustrates year by year for the 100 railroads the cumulative net increase in stock, bonds, and notes, from whatever cause, over the securities outstanding on June 30, 1913.

The central diagram on Chart VII shows for the 100 roads the upward trend of bonds outstanding, the even steeper course of capital stock, and the falling off in notes which was evident up to the time of the 1920 crisis. It may easily be seen that the eastern trunk lines and their subsidiaries were chiefly responsible for the net changes in volumes of bonds and notes outstanding.

Upon taking up each type of security separately, it is observed that the first great increase in bonds occurred during the year ended June 30, 1915. This is a reflection of the large volume of financing accomplished by the trunk lines and others in 1914 and 1915, an unusually small percentage of which was for refunding purposes. The differing time intervals on the two Charts VI and VII do not permit a more direct comparison between the two.

During the next year and a half, the fall in the bonded debt of a few central and southwestern lines which were undergoing reorganization, coupled with a decline in new financing, caused the only downward movement in the bond curve. A continuation of these causes prevented a greater recovery in 1917 than actually took place. From this point until 1922 the increase in outstanding bonds of all roads was steady and not spectacular. The large Northern Pacific–Great Northern flotation in 1921, being a refunding operation, is reflected to only a minor extent in the present chart. A check on the rapidity of the rise came from the retirement



through conversion of Santa Fe and Southern Pacific bonds, as well as the purchase of outstanding bonds for railroad treasuries. The year 1922 witnessed a sharp increase in the amount of bonds in the hands of the public as a result of the heavy bond financing of the year.

A good part of the notes outstanding after the 1913-1914 rise in money rates were allowed to mature without being refunded by other note issues; this fact accounts for the pronounced drop in the note curve. The momentary revival of note issuance just preceding the entrance of the United States into the World War is reflected in the chart, as are the increases due to the high money rates of 1920, and the government equipment trust agreements and other funding of railroad indebtedness to the United States Treasury. Since the new equipment trust obligations were carried on the balance sheets of the railroads at the end of 1920, but were not offered to the investing public by the government until 1921 and the following years, the discrepancy between the movements of note curves on Charts VI and VII is large. The high favor in which the equipment trust certificate is held, both as a means of financing and a medium of investment, is further exemplified by the steepness of the rise in the note curve during 1923, a year in which the railroads added to their equipment a considerable amount of new rolling stock.

The most surprising feature of Chart VII is the fact that the curve showing

the cumulative net increase in capital stock rises higher than either the bond or the note curve. As we have seen, a negligible amount of this increase has resulted from the issuance of stock in the ordinary course of financing as an alternative to interest-bearing obligations. The steady growth, as we know, is due partly to conversions of transcontinental bonds into stocks, and partly to stock dividends, but principally to the reorganization of carriers in receiverships. The increase during the year ended June 30, 1916, is attributable chiefly to the reorganization of the Wabash, coupled with Santa Fe bond conversions, while the marked rise during 1917 was the result of a number of reorganizations already sufficiently detailed, together with stock dividends of two roads of lesser importance, a preferred stock issue of a coaler for the purpose of clearing away some notes in default, and an issue of stock by a southern road to retire some non-convertible bonds. The transcontinentals alone account for the moderate rise during 1918-1920. The increase in 1921, which incidentally was a peculiarly unpropitious year for stock financing, resulted from stock dividends by the Burlington and the Lackawanna roads. The year 1922 witnessed a few stock sales to the public. New stock was also issued by the New York Central in exchange for Big Four preferred and common, and the Chicago and Eastern Illinois was reorganized. The 1923 increase resulted in large part from the stock dividend of the Louisville and Nashville and the reorganization of the Missouri-Kansas-Texas.

SOME ASPECTS OF CHAIN-STORE DEVELOPMENT

By WADSWORTH H. MULLEN

THE chain store is a relatively new factor in the merchandising field; it was not until the latter half of the nineteenth century that the first chain was founded, contemporaneously with the establishment of the earliest department stores and mail-order houses. The Great Atlantic and Pacific Tea Company, organized as a wagon company in 1858, appears to have been the first merchandising organization to adopt the idea of having more than one retail unit under a central management. The Jones Brothers Tea Company, another grocery chain, appeared in 1872, followed by the Woolworth 5-and-10-cent stores in 1879. It is only since 1900, however, that the chain idea has spread to a number of fields and has attained its greatest importance in those fields where the first chains were established. The dimensions of this growth in the number and size of chain-store systems are astonishing. A conservative estimate would place the total annual volume of business of chains at well over a billion dollars, and the number of stores operated at nearly 100,000. Of this great number of individual units, approximately 50% are operated by grocery chains, with drug, shoe, tobacco, and 5-and-10-cent-store chains all operating another 20% to 25% of the total number.

The distributive field affords numerous examples of integration.[1] The leading mail-order houses and most of the large department stores have their own purchasing organizations and control extensive manufacturing and transportation facilities. Chain-store systems, perhaps to a greater extent than either of the above two types of merchandising institutions, have become integrated; it is the purpose of this article to evaluate the integration of those chains. Since it is only the largest chains in each field that are able to manufacture and to take over tasks in the merchandising process ordinarily performed by specialists, an examination of the largest chains in a few fields will afford a satisfactory index of the importance of integration. The inquiry, then, was limited to the more important chains of the four types of groceries, drugs, shoes, and tobacco. The number of chain stores in these four fields constitutes nearly three-fourths of all the chain stores in the country; moreover, although chains of these four kinds are probably more highly integrated than those of any other field, at the same time they lend themselves to analysis more readily than do chains of certain other important types. The necessary data for this inquiry were collected by the questionnaire method.[2]

[1] The term "integration," which denotes the union under a central management of two or more stages in any productive process, is ordinarily applied to manufacturing enterprises. However, see Lewis H. Haney, "Integration in Marketing," *American Economic Review*, Vol. X, No. 3, p. 508, for its application to marketing.

[2] Replies to a questionnaire sent out by the writer were received from 12 grocery chains, 9 drug chains, 7 shoe, and 4 tobacco chains—32 in all. This number constitutes over 15% of the leading chains in each field. Information from local chains was, as a rule, secured by a personal interview, or else the replies were checked up in this manner.

I. The Purchasing Sources of Chain-Store Systems

Purchasing direct from the producer was probably the first function, extraneous to simple retailing, to be assumed by chains. It is generally recognized that a well-defined tendency exists for them to eliminate the middleman by purchasing direct a majority of the items that they stock. The essential lines of inquiry to be followed in a determination of how far this elimination has been carried are: (1) an investigation of the amount of direct buying done by chains, and (2) a comparison with the purchasing sources of the independent retailer. It may be said here that probably no chain buys direct all of the articles it sells, and on the other hand, only a few independent retailers depend wholly upon middlemen for the entire range of their commodities. The difference between the chain and the independent retailer in purchasing methods, then, is a difference of degree rather than of kind.

1. GROCERY CHAINS. The items commonly stocked by chain grocery stores were for purposes of analysis divided into some 15 groups of related items. Table I, below, shows the extent to which the chains under consideration utilize the middleman in securing their supplies of each of these 15 commodity groups. Table II, on the following page, gives a comparison between the chain, as exemplified by the data presented in Table I, and the independent retail grocer.[3]

Inspection of Table I reveals certain noticeable differences among these 15 commodity classes with respect to the number of chains that secure them from middlemen. There is, however, clearly but little tendency to rely upon the jobber. None of the eight chains purchases crackers or bread from jobbers or middlemen. Even in the case of canned

[3] Bulletin No. 13, 1919, of the Harvard Bureau of Business Research, which sets forth the purchasing sources of nearly 1,400 grocers, was utilized to secure information on the purchasing methods of the independent grocer.

TABLE I. ANALYSIS OF PURCHASES FROM MIDDLEMEN BY EIGHT GROCERY CHAINS

Item	Total Chains Reporting Purchases from Middlemen	Chains Purchasing Specific Percentages of Supplies from Middlemen									
		Under 10%	10-20%	20-30%	30-40%	40-50%	50-60%	60-70%	70-80%	80-90%	90% and over
Bread	..	..	..	..	..	..	..	..	..	..	..
Crackers	..	..	..	..	..	..	..	..	..	..	..
Flour	1	..	1	..	..	..	..	..	..	..	..
Coffee, tea, cocoa	3	..	2	1	..	..	..	..	..	..	..
Miscellaneous household articles	2	..	1	..	..	..	1	..	..	..	..
Butter, eggs, cheese	3*	..	..	1	..	..	1	..	..	..	..
Canned vegetables	4	..	2	1	..	..	..	..	..	..	1
Perishable commodities	2	..	..	..	..	..	..	..	1	..	1
Soap, soap powder and flakes	3	..	1	..	..	..	..	..	1	1	..
Canned milk	2	..	..	..	..	..	..	..	..	..	2
Spices, condiments, oils	4	..	1	1	..	..	..	1	..	..	1
Sugar, candy and chocolate	3	..	..	..	1	..	..	..	1	..	1
Cereals, spaghetti, macaroni	4	..	1	1	..	..	..	..	1	..	1
Canned sea foods	4	..	1	1	..	..	..	..	..	1	1
Canned fruits	3	..	..	..	..	1	..	..	..	..	2

* One chain failed to report the specific percentage.

TABLE II. PURCHASING SOURCES OF INDEPENDENT RETAIL GROCERS AND EIGHT GROCERY CHAINS*

Item	Percentage of Independent Retailers Reporting Purchase of All or Part of Supplies from Middlemen	Percentage of Chains Reporting Purchase of All or Part of Supplies from Middlemen†
Bakery goods.....	5.0 %	0.0%
Breakfast foods.....	More than 80.0 %	50.0%‡
Crackers	8.0 %	0.0%
Flour	33.33%	12.5%
Soap, and so forth...	86.67%	37.5%
Condiments	66.67%	50.0%§
Sugar	80.0 %	37.5%‖
Confectionery	60.0 %	37.5%‖

* Source of Data for Independent Retailers: Harvard Bureau of Business Research, Bulletin No. 13, 1919.

† Data from Table I.

‡ For the class of "Cereals, spaghetti, and macaroni," in Table I.

§ For the class of "Spices, condiments, oils," in Table I.

‖ For the class of "Sugar, candy and chocolate," in Table I.

fruit, when the percentages of their total supplies bought from the middleman by the three chains using him are aggregated, this aggregate, although larger than for any other class, is still only slightly over a fourth of the total combined purchases from all sources of the eight chains for this item. In the case of no item were there more than four chains dependent upon the middleman for any part of their supplies of that commodity. And where there were as many as four chains buying from the jobber, two or more usually secured insignificant portions of their total requirements in this fashion. Table II shows how much greater is the percentage of the independent grocers relying upon jobbers than is the percentage of the chains. In the case of these eight items, almost twice as many independent grocers buy from middlemen as do the chains.

A distinct relationship seems to exist between the amount of direct purchasing performed by a chain and the number of stores operated. Five chains of the eight buy some part of their supplies of each of these fifteen items direct from the producer. Two of these five are the largest chains of the eight, while the other three fall in the next smaller size group. It is the smallest chain of the eight that does the least amount of direct purchasing, securing direct some portion of its supply of only nine items of the fifteen.

2. DRUG CHAINS. In the application of the same sort of analysis to drug chains that was applied to grocery chains, certain difficulties are encountered. Because of the large number of items stocked by the average chain drug store, it is difficult to devise a satisfactory system of classification. Moreover, less detailed data with respect to the purchasing sources of the independent retailer are available. Practically the only usable information of this character is contained in a bulletin of the Harvard Bureau of Business Research, detailing the results of a survey of nearly 200 independent retailers.[4] This survey showed that only one druggist of the group bought exclusively from the wholesaler; but on the other hand, only a few bought as little as 5% or 10% of their total purchases through middlemen. The usual proportion of purchases made through the drug jobber was 60%, while the remainder was bought direct or through cooperative buying associations. Those who bought direct usually secured from 25% to 30% of their total supply in this fashion. Table III, following, summarizes the situation in the chain-store field.

Table III shows that little reliance is placed upon the drug jobber by the five chains under consideration. In none of the ten commodity classes were all of the five chains entirely indepen-

[4] Bulletin of the Harvard Bureau of Business Research, No. 22, 1920.

dent of the middleman. But in most cases, only small proportions of their total supplies were purchased from the jobber by these chains. As a general rule, novelties are purchased direct more frequently than are the staple items stocked by the drug chain. Most chains buy direct the toys and novelties, and the clocks and brushes and other items of house furnishings that they carry. The reason for this method of purchase is no doubt the fact that the retailing of such items is not properly within the province of the drug store, and therefore the manufacturer has been obliged to go direct to the chain to get them introduced. A good many chains, however, still depend upon the drug jobber for considerable proportions of the more staple items, such as medicines, toilet articles, and drugs and chemicals.

3. Shoe Chains. A survey made in 1921 by the Federal Trade Commission[5] revealed the fact that about 40% of the sales of shoe manufacturers were made to shoe jobbers and other middlemen, about 50% were made direct to the retailer, and the other 10% disposed of through manufacturers' chains, direct to the trade, and so forth. The jobber is no doubt a still more important factor in supplying the retailer with the other items commonly carried; the sales by the average retailer of such items are small, as shoes constitute about 85% of his total sales. The chain-store system, however, seems to have proceeded much further in this elimination of the jobber, and only a small fraction of the purchases of the six chains reporting were made through this medium. Although three of these six chains are manufacturers' chains, there seems to be little difference, as compared with the retailers' chains, in purchasing methods.

Five of the six chains bought a part of their shoes, and some of their overshoes and rubbers, from the jobber, but all bought less than 10% of their total supplies from this source. In the case of boots, only four chains relied upon the jobber, all buying less than a tenth of their total requirements from the middleman. Stockings are secured indirectly by all six chains, but here only one chain of the six bought over a tenth of its supply from the jobber, with this one chain securing 20% of its require-

[5] Report of the Federal Trade Commission on "Shoe and Leather Costs and Prices," 1921, p. 119.

Table III. Number of Items Purchased through Middlemen by Drug Chains

Item	Number of Chains Reporting Purchase of Any Part of Supplies from Middlemen	Chains Purchasing Specific Percentages of Supplies from Middlemen									
		Under 10%	10-20%	20-30%	30-40%	40-50%	50-60%	60-70%	70-80%	80-90%	90% and over
Toys and novelties	3	3	..	..	..	..	..	..	..	..	..
Household furnishings	4	2	1	1	..	..	..	..	..	..	..
Stationery and writing materials	4	2	..	2	..	..	..	..	..	..	..
Rubber goods	4	2	..	2	..	..	..	..	..	..	..
Medicines	5	1	1	3	..	..	..	..	..	..	..
Toilet articles	5	1	3	..	..	..	1	..	..	..	..
Cigars and tobacco	3	1	..	1	..	..	..	..	..	1	..
Drugs and chemicals	4	1	1	..	1	..	..	..	1	..	..
Food articles	5	2	..	2	..	..	..	..	..	1	..
Candy and confectionery	4	1	..	2	..	..	..	..	..	..	1

ments from middlemen. Spats, shoe laces, blacking, fancy buckles, and so forth, are also generally purchased direct, with only one chain of the six securing over 10% of its stock indirectly.

4. Tobacco Chains. There is, unfortunately, little definite information with regard to the purchasing methods of independent tobacco retailers. However, this field is ordinarily recognized as one of the strongholds of the jobber; the number of such middlemen is probably exceeded only by the number of grocery jobbers. It is safe to assume, then, that the average tobacco retailer does little or no direct purchasing. On the other hand, the chain relies only to a very limited extent upon the jobber.

Three of the four chains under consideration are fairly large chains. None of these three buys from the middleman over a tenth of its supply of any of the items that it stocks. But the fourth chain—a small one—buys a considerable portion of its stock from the jobber. Half of its cigars are purchased in this manner; and all of its cigarettes, smoking tobacco, candy, and shaving accessories, and a tenth of its smoking accessories, are secured indirectly. Taking the three larger chains as typical, however, it may be said that the jobber has been practically eliminated in this field.

II. Warehousing and Trucking

Storage of commodities in warehouses and the transportation of those commodities to the store which is to retail them are two additional functions ordinarily performed for the independent retailer by the jobber from whom he purchases those articles. But these related tasks of securing the goods from the manufacturer, of storing and eventually of distributing them are necessarily assumed by the chain when that chain takes over the purchasing of goods direct from the producer, and often the labeling and repacking of those goods.

The jobber is still a factor in chain-store purchasing, and a great many articles are bought from him. His trucks and warehouses are used in transporting and storing those articles. It was therefore decided to limit this inquiry to the extent to which chains have taken over these two related functions and to a determination of what percentage of their facilities of this nature chains themselves own. As a general rule, the ownership of warehouses and trucks accompanies a higher degree of integration than does the mere renting of such facilities.

Of the 32 chains reporting on this question, 12 declared that they owned some portion of the warehouse space utilized. Much of the significance of this report is destroyed by the fact that 5 of the 12 chains failed to report the specific proportion that they owned. Of the 7 that made a complete report, however, 6 declared that they owned all of the space used, while the other chain reported that over 90% was owned. None of the 4 tobacco chains owns any storage space; but in the other fields the percentage of chains reporting the ownership of such space to the total number of chains reporting ranges between 40% and 50% in each field, thus showing a very uniform degree of ownership over the 3 fields.

Of these 32 chains, 19 own some part of their trucking facilities. Nine own all of the trucks that they operate, 12 own over 90%, and 17 own over half of them. A greater percentage of chain groceries own their own trucks

than do chains of any of the other types examined. Ten of the 12 chains in this field own 70% or over of the trucks and wagons they operate. In the drug field, two-thirds of the 9 chains own part of their transportation facilities, with 3 reporting complete ownership. One out of the 7 shoe chains owns 80% of its trucks, and another, 5%. Only 1 of the 4 tobacco chains reports the ownership of any of its transportation facilities, with the percentage of ownership in the case of this chain running to 90%.

III. Manufacturing

Manufacturing is an activity more alien to simple retailing than is either of the jobbing functions that have previously been considered. A great many retailers purchase some of their commodities direct from the producers, but it may safely be said that no retailer does any manufacturing worthy of mention. Chain stores, then, in taking over this task have gone into a field quite foreign to the province of the average retailer, and they have therefore proceeded with caution. The manufacturing that they perform is of two general types: first, the manufacture of items destined for sale in the stores of the chain; and, secondly, the production of the supplies which are required to keep those stores in operation. Still a third type of production might be distinguished: that is, the production of raw materials for further fabrication. This type, however, is relatively unimportant, as will be pointed out later.

Of the 10 grocery chains from which reports were received on their manufacturing activities, 4 did no manufacturing whatsoever. One of these 4 is a large chain, operating over 500 stores, while another has from 100 to 200 units. Bread is the most popular item of manufacture with the remaining chains: all 6 were unanimous in reporting the production of this staple. Five chains baked all of the bread they sold, and the sixth, half of its supply. Coffee was next in line of popularity: the largest chain of the group reported that it roasted all of the coffee it sold, and another chain declared that it packed coffee and cocoa, without reporting what proportion of its supply. The former chain also bakes 30% of its crackers, and still another produces 10% of its sugar, candy and chocolate. Another chain has a subsidiary engaged in the manufacture of flavoring extracts.

Although the manufacturing activities of several of these chains have attained a considerable importance, nevertheless, the range of commodities produced by another chain—one of the largest in the country—is much wider than in the case of any of the other chains examined. In 1922 the chain in question baked about 40% of its yearly bread sales of 125 million loaves. Coffee roasting plants are operated at several of its warehouses, and at the home plant it produces ammonia, baking powder, peanut butter, extracts, jelly powder, vinegar, and spices. It operates several fruit and vegetable canning plants, salmon canneries, and an evaporated milk plant. In addition to these activities the commodities that it puts up or labels at its warehouses would probably constitute a majority of the items stocked by its stores.

Manufacturing by drug chains is somewhat narrower in scope than in the case of some of the grocery chains examined. It is limited to items in the three commodity classes of medicines, drugs and chemicals, and toilet articles. The lack of sales concentration makes

it unprofitable for even the large chains to produce any very wide range of commodities. But the three classes of products mentioned constitute such an important share of the sales of drug chains — probably 50% — that such chains are able to produce certain of the leading items in those classes. The following percentages obviously cannot be taken to mean that the chains mentioned manufacture a portion of each of the items included in the broad commodity group used; but rather that for a few items, the sales of which are large, the chains manufacture nearly all of their supply, while they may not manufacture any of the numerous other items included in the class.

Four drug chains out of the seven reporting produce some part of their supply of those articles which have been designated as "drugs and chemicals." One chain did not report what percentage of its total supply was produced; the other three manufacture, respectively, 8%, 4%, and 5% of their total requirements, although the last chain declared that a subsidiary produced an additional 5% for it. Five of the seven chains produce medicines of one sort or another. One chain again failed to report the specific percentage, while the others manufacture, respectively, 25%, 25%, 5%, and 6% of their total sales. Lastly, the same number of chains produce toilet articles, with four chains reporting, respectively, 35%, 25%, 15%, and 3% as the proportions of their total requirements that they produce. In addition to the above chains, still another—one of the largest in the country—declared that about 18% of its total sales was of goods of its own manufacture, without specifying in what departments of its business this manufacturing was concentrated.

Manufacturing seems to be of somewhat greater importance in the drug field than in the grocery field. A greater proportion of the chains reporting have gone into manufacturing, and although the percentages of manufacture reported per group are small, this is in part the result of the broader groups used. Moreover, manufacturing is by no means restricted to the larger chains, as seems to be the tendency in the grocery field. One of the drug chains reporting a considerable amount of manufacturing operates only 4 stores, and another, 14 stores. It may be noted, however, that the average sales per store of drug chains are considerably higher than are the sales of grocery chains.

A somewhat more complicated situation exists among chain shoe stores. As previously pointed out, chains of this type must be divided into retailers' and manufacturers' chains. The real indication of the amount of manufacturing done by chain shoe stores must lie in the amount performed by the former type of chain, since naturally the sales of manufacturers' chains consist to a very considerable extent of the parent company's product. Only one of the four retailers' chains does any manufacturing; this chain produces about 30% of the boots and shoes that it sells. Only a few of the largest retailers' chains have a volume of sales sufficient to make it profitable for them to manufacture, in view of the large scale of operations in the shoe industry. As opposed to retailers' chains, however, the sales of two manufacturers' chains run over 90% of the parent company's manufacture, while the percentage in the case of the third chain of this type is 65%.

Manufacturing by tobacco chains is also concentrated into one or two items,

as the sales of these same items are large. Two of the four chains reporting—both small chains—do no manufacturing; but one of the other chains produces 90% of the cigars it sells, and the other, 80% of its sales of this item. The latter chain also manufactures a fourth of its smoking tobacco. In general, it is unusual for a chain to take up the production of any such widely-advertised article as smoking tobacco, because of the difficulty experienced by that chain in introducing its own brand in competition with more widely-known brands.

Still another phase of the production of commodities by chain-store systems is the production of raw materials. Such articles may either be sold in the stores of the chain in a crude state—for instance, fruits and vegetables—or they may be intended for further fabrication. The ownership or facilities for the production of such material are usually beyond the reach of the average chain. However, it was stated above that one of the largest grocery chains owns several farms and salmon fisheries. One other chain, operating from 100 to 200 stores, declared that about 60% of the fruits and vegetables retailed in its stores were grown on a farm that it owned, and that about 5% of the fruits and vegetables used by its canning plant were grown on that same farm. To the writer's knowledge, no type of chain other than a grocery chain owns facilities of this nature, although it is quite possible that one or two of the large cigar chains own or control tobacco plantations. However, the sources of supply for chains of other types are usually more difficult of acquisition and more complex of operation than are farms and plantations, and the ownership of such facilities is therefore probably limited to the largest chains of the types mentioned.

PRODUCTION OF SUPPLIES

The second main division of the manufacturing done by chains is the production of supplies which are to be used by the stores of those chains. Of the eleven grocery chains reporting on this question, six do some manufacturing of this character. Five print their own store signs and price tags, with four producing over 80% of their requirements. Three print over four-fifths of the stationery that they use, two manufacture a part of the furniture and fixtures required in their stores, while still another produces a fifth of its cartons and containers. Four of the eight drug chains print over 80% of their store signs and price tags, while another manufactures about a tenth of its furniture and fixture requirements. Two of the seven shoe chains produce a considerable proportion of their shoe cartons. None of the cigar chains reporting does any manufacturing of this type.

IV. Private Brands[6]

It has been pointed out before that the difference between the purchasing methods of chains and of the independent retailers is a difference of degree rather than of kind. The same is true of the use of private brands; no chain sells all commodities exclusively under its own labels, and conversely, quite a few retailers have their own private brands. The Harvard Bureau of Busi-

[6] The assumption by the chain of the task of private branding is not properly a step in the integration of that chain. But private branding is so closely connected both with purchasing direct from the producer and with manufacturing that it was thought advisable, from the standpoint of completeness, to include a survey of its importance in this inquiry.

TABLE IV. NUMBER OF CHAINS REPORTING THE SALES OF COMMODITIES UNDER THEIR PRIVATE BRANDS

Item	Number of Chains Reporting Sales under Their Private Brands	Chains Reporting Specific Percentages of Sales under Their Private Brands									
		Under 10%	10-20%	20-30%	30-40%	40-50%	50-60%	60-70%	70-80%	80-90%	90% and over
Bread	9	..	..	..	..	1	..	..	..	1	7
Coffee, tea, cocoa	9†	..	1	1	..	1	..	..	..	1	5
Flour	8	..	..	1	1	..	..	..	..	3	3
Spices, condiments, oils	6§	1	..	..	..	..	..	1	1	..	3
Crackers	5	..	..	..	..	1	..	..	..	..	4
Miscellaneous household articles	6‡	1	..	..	1	..	..	..	..	..	4‡
Cereals, spaghetti, macaroni	6	..	..	1	1	1	..	..	..	..	3
Butter, eggs, cheese, etc	6*	2	..	..	..	1	..	..	..	..	3*
Canned vegetables	3	..	..	1	..	..	..	1	..	..	1
Sugar, candy, chocolate	4	2	1	..	..	..	..	..	..	..	1‖
Canned milk	1	..	..	..	..	..	..	1	..	..	..
Canned fruits	1	..	..	..	..	1	..	..	..	..	..
Soap, soap powder and flakes	1	1	..	..	..	..	..	..	..	..	..
Canned sea foods	..	..	..	..	..	..	..	..	..	..	..
Perishable commodities	..	..	..	..	..	..	..	..	..	..	..

* Butter and eggs, for one chain.
† Coffee only, for one chain; coffee and tea only, for two chains.
‡ Blueing and ammonia only, for one chain.
§ Spices only, for two chains.
‖ Syrups only, for one chain.

ness Research, in its bulletin on grocery stores previously referred to, declared that most grocers have their own brands in some line of merchandise—usually for coffee, tea, canned goods, and flour. Others sell ammonia, starch, soap, olives, cereals, cocoa, and so forth, under their own labels. Drug retailers frequently sell drugs and simple medical preparations in this fashion, while numerous shoe retailers have their own lines, and are encouraged in this practice by the manufacturer selling an unbranded product. Under these conditions it is difficult to measure the difference between the chain and the retailer in the use of the private brand; a simple statement, therefore, of the practices of chains in the four fields under consideration is all that will be attempted.

I. GROCERY CHAINS. Table IV, above, is similar to tables in previous pages, being a frequency table showing the number of chains reporting that specified percentages of their total sales of the listed articles are made under their private brands. It is clear that in the grocery field the private brand has attained great importance. Seven of the nine chains reporting sell all of their bread under their private brands, and five of the nine sell all of their coffee in the same fashion. Moreover, those chains that do not sell all of these two commodities under their own labels make a part of their sales in this manner. Apparently, staple items are sold under private brands more often than are certain articles, such as canned sea foods, canned fruits, and so forth, which partake more of the nature of specialties.

2. DRUG CHAINS. Manufacturers' brands seem to be of more importance in the drug field than in the grocery field. Drug chains stock a very wide range of commodities; the sales of each item, therefore, tend to be small, and

considerable difficulty is experienced in introducing the private brand of the chain. Reference to Table V shows that it is for the commodity groups composed of the more staple items that the private brand has been introduced most extensively. Sales of medicines, toilet articles, and drugs and chemicals bulk large in the total sales of the chain, and, therefore, that chain often finds it profitable to substitute its own brands for the more widely-known brands of the manufacturer. Specialty items, however, such as toys, rubber goods, items of household furnishings, and so forth, are almost exclusively retailed under the producers' trade names.

3. Shoe Chains. The chain's private brand is of greater importance in this field than in any of the other fields in which inquiry was made. About 85% of the sales of the average shoe retailer are composed of boots and shoes. The importance of the private brand is evident when reference to Table VI, on the next page, shows that four of the seven chains reporting retail all of their shoes under their private brands, and that the remaining three chains make over two-thirds of their shoe sales in the same fashion. Boots are retailed almost exclusively under private labels by four chains, and stockings are sold in this manner by two of the seven chains. The other items stocked, however, are sold almost entirely under the trade name of the producer.

4. Tobacco Chains. Only a few commodities are sold by tobacco chains under their private brands. The advertising of tobacco products of almost every type is so extensive that it is only with difficulty that the consumer is induced to accept the brand of the chain. It is in the line in which this national advertising of tobacco products has been perhaps the least extensive—that is, cigars—that the private brand has crept in. One chain of the four reporting sells over 90% of its cigars under its private label, while another chain makes 10% of its sales in the same way. One chain sells three-quarters of its smoking tobacco under its private brand. For none of the other items which are stocked has the private brand been introduced.

V. Conclusion

The facts set forth in detail in the

Table V. Number of Drug Chains Reporting Sales of Commodities under Their Private Brands

Item	Number of Firms Reporting Sales under Their Private Brands	Chains Reporting Specific Percentages of Sales under Their Private Brands									
		Under 10%	10-20%	20-30%	30-40%	40-50%	50-60%	60-70%	70-80%	80-90%	90% and over
Medicines	7	4	..	..	..	1	..	..	1	1	..
Toilet articles	6	4	..	..	..	..	..	..	1	..	1
Drugs and chemicals	5	3	..	..	..	1	..	..	..	1	..
Food articles	3	1	..	..	1	..	..	..	1	..	..
Candy and confectionery	2	1	..	..	..	1	..	..	..	..	..
Rubber goods	1	..	..	..	..	1	..	..	..	..	..
Stationery and writing materials	..	..	..	..	..	..	..	..	..	..	..
House furnishings	..	..	..	..	..	..	..	..	..	..	..
Toys and novelties	..	..	..	..	..	..	..	..	..	..	..
Cigars and tobacco	..	..	..	..	..	..	..	..	..	..	..

TABLE VI. NUMBER OF SHOE CHAINS REPORTING SALES OF COMMODITIES UNDER THEIR PRIVATE BRANDS

Item	Number of Firms Reporting Sales under Their Private Brands	CHAINS REPORTING SPECIFIC PERCENTAGES OF SALES UNDER THEIR PRIVATE BRANDS									
		Under 10%	10-20%	20-30%	30-40%	40-50%	50-60%	60-70%	70-80%	80-90%	90% and over
Shoes	7	..	..	..	..	..	..	1	..	2	4
Boots	4	..	..	..	..	..	..	..	..	1	3
Stockings	2	..	..	..	..	..	..	..	..	..	2
Shoe laces and blacking	2	..	..	..	..	1	..	..	..	..	1
Spats	1	..	..	..	..	..	..	..	..	..	1
Fancy buckles	1	..	..	..	..	..	..	..	..	..	1
Overshoes and rubbers	..	..	..	..	..	..	..	..	..	..	..

preceding pages may be briefly summarized as follows:

1. PURCHASING SOURCES. It has been pointed out that almost all retailers buy some of their commodities direct from the producer. But the chain has proceeded much further in this direction, and in many fields the jobber has virtually been eliminated as a factor in chain-store purchasing. Retail grocers buy from 70% to 80% of their stocks from jobbers and wholesale grocers, to roughly summarize the findings of the Harvard Bureau of Business Research. Chains probably secure five-sixths of their stocks from the manufacturer. In the drug field, the retailer buys 60% of his supplies from the jobber, while the chain purchases less than a fifth of its stock in this way. The average shoe retailer buys 40% of his shoes from intermediate sources, but the chain secures over 90% of its supply direct. The average tobacco chain probably purchases as large a proportion of its requirements from the manufacturer as the shoe chain, but the retailer in this field probably depends upon the jobber for over three-fourths of his requirements.

In general, chains purchase staples direct more often than they do specialty items. Grocery chains usually buy bread, soap, sugar, and flour from the producers; shoe chains secure their shoes in this way and tobacco chains habitually purchase cigars and cigarettes without the intervention of the middleman.

2. WAREHOUSING AND TRUCKING. These two related tasks were necessarily taken over by the chains when those chains started to buy direct from the producer. About 40% of the chains in each field own some part of their warehouse facilities and a large number own from 90% to 100%. Well over half of all the chains own some part of their trucks. In the grocery field, two-thirds of the chains own 90% or over of their facilities of this nature.

3. MANUFACTURING. Manufacturing is still of limited importance in the chain field. Most grocery chains bake their own bread, and a few roast coffee. Drug chains produce certain items of drugs and chemicals, medicines, and toilet articles. Only a few retailers' chains manufacture their shoes, but most tobacco chains produce cigars. Ownership of the sources of raw materials is of limited importance; only one or two very large chains have facilities of this nature. A considerable number of chains have taken up the production of supplies of various kinds.

4. USE OF PRIVATE BRANDS. The average retailer uses private brands only to a very limited extent. Grocery and drug retailers usually have a few items which they retail under their own names, while shoe retailers frequently have their own lines. The brands of the independent retailer are, however, relatively unimportant.

The average grocery chain sells bread, dairy products, flour, cereals, spaghetti and macaroni, and similar products, under its private label. Drug chains sell such staple items as drugs and chemicals, medicines, and toilet articles under their private brands, while shoes are sold almost exclusively under the label of each chain.

At a rough estimate, grocery chains make nearly a third of their sales under private brands; drug chains, about 10%; shoe chains, from 80% to 90%; and tobacco chains, about 20% under private trade names.

Chains have failed to adopt the private brands more generally in their stores because of the difficulty experienced in inducing the consumer to accept articles bearing those private brands. One of the reasons for the success of the chain is the large volume of sales per clerk. The chain cannot attain this large volume if its clerks are obliged to overcome the resistance of the consumer to the private brands of the chain. The present tendency is to stock both the private brands of the chain and national brands of manufacturers, with the intention of substituting the former whenever possible.

INTEREST OF TRADE ASSOCIATIONS IN PATENTS AND TRADE-MARKS

By KARL FENNING

THE executive officers of many trade associations pay little or no attention to patents and trade-marks. This may be reasonable, since they are generally looked upon as monopolies and as of individualistic character. Nevertheless, since community of interest may be developed, it may be desirable to have those in charge of trade-association activities direct their attention to patents and trade-marks.

There is sometimes an advantage in having the members of an industry agree to transfer all patents which they own or may own to a trustee, which may be the trade association, with the understanding that the trustee will license every member of the association to employ all of the patented inventions for a reasonable consideration, or for none. The advantage which a member of the association gets by freedom to use the inventions of other members of the association is generally a sufficient consideration to him for surrendering his own patents. Such an arrangement, of course, should clearly specify that in operating under these patents no manufacturer should imitate in shape, form, or style any device already placed on the market by another manufacturer. A license under a patent need not necessarily allow the licensee to make a Chinese copy of the patented device as built by the inventor, or the owner of the patent. A corollary of this sometimes limits such a pooling of patents for license purposes to those relating to smaller or less important advances or improvements in the industry, thus leaving to each manufacturer who owns a really important or basic patent the exclusive right to the invention there involved.

I

The trade association may well inform its members of some of the elementary principles relating to United States as well as foreign patents. A patent should be carefully investigated in view of the prior art before it is purchased or dealt in or sued on. The association then may properly employ a corps of patent lawyers and investigators, whose function will be to investigate for any member of the association any patent which is brought to it for purchase or license. The members of the association may thus be prevented from inadvisedly entering into royalty contracts, which are really without consideration and may become onerous. This investigating bureau also may be called upon by a manufacturer about to produce a new article, or go into a somewhat new line, to investigate the patent situation and determine whether the new venture of the member is likely to result in loss due to infringing patents owned by others.

The members of the association should be advised that in most instances an application for a foreign patent should not be filed until assurance is received that a patent is to be allowed in the United States Patent Office, remembering that it is advisable to file abroad within one year of the filing of the

United States application. If no patent can be procured in the United States, probably no valid patent can be issued in some of the foreign countries, and this delay will save the expense of foreign patent applications in many instances. Most foreign countries require annual taxes, which increase each year and become extremely burdensome. Many countries require actual manufacture under the patent in the country in order to keep the patent alive, and some provide that importation into the country of goods covered by the patent annuls the patent. A knowledge of these facts frequently saves much expense and trouble by causing manufacturers to limit their foreign patent applications to countries in which there is a reasonable prospect of a satisfactory financial return from the patent.

Though the United States Patent Office issues each week an official gazette, describing every patent as issued, and a circular of "General Information Concerning Patents," there is a vast amount of information in the United States Patent Office which has not been properly disseminated. Funds have never been available for printing volumes describing patents in the various arts. The office does however keep patents classified according to subject-matter, so that a trade association may develop a file of accessible information on patents relating to the industry in which it is interested. Many patents, for one reason or another, are never worked or the inventions are not put into use by the patent owners. At the end of the 17-year period, for which the patent is granted, the inventions described in these patents are free and open to be used by the public. In order that the public may be advised when these inventions become free, a trade association might well report to its members at stated intervals, say once a year, all of the patents, or those that seem worth while, which have expired. These may be identified by reading 17-year-old issues of the *Official Gazette of the Patent Office,* in which are published a cut and claim of each patent as granted.

II

Frequently an entire industry is affected by a single patent which is so revolutionary as to cause a substantial reorganization of the industry. Such patents should be reported to all members of the industry as soon as issued. Such patents sometimes contain broader claims and are more expansive on their face than the prior activities of the industry warrant. While an inventor is always entitled to the reward for his invention, it is of course to the interest of the public and to the interest of the industry to see that he gets no broader protection than his invention merits. When an attempt is made to establish such an important patent by suit for infringement against a manufacturer, the entire industry may well join the manufacturer, possibly in sharing the expenses of the suit, certainly in assisting the defendant to find proof of prior uses which may exist, but which may have been neither patented nor described in printed publications. Many things are done in factories which are not disclosed to the world and which may be known to only a few in the particular factories.

Sometimes even after a patent for an important invention has been established by a court decree, it is possible to obtain more satisfactory licensing agreements if the industry acts as a whole. The owner of the patent naturally accepts a smaller individual royalty from a large number than he

could afford to accept from a single manufacturer, and this is to the benefit of the industry and of the public as well because it allows all manufacturers to enter into selling competition.

Pending a suit the owner of a patent frequently declines to allow its use, unless each manufacturer enters into an agreement to acknowledge the validity of the patent and to continue royalty payments, even if the patent is finally declared invalid in the suit then pending. The unreasonable burden thus placed upon the manufacturer and upon the public may be relieved by a combination of some or all the members of the industry in organizing a new company to manufacture the patented device and supply it to the members under reasonable conditions.

Patents are sometimes issued for things which are not in fact new, because the Patent Office cannot have absolutely complete records of the prior art. Many real inventions are made and carried into effect without being patented or described in printed publications. For the protection of the public generally and of the industry, trade associations should urge their members to patent everything possible as an insurance against someone else later getting a patent for the same thing and causing much trouble and expense. Many things, which may seem to be too insignificant to be patented, may be brought to the public attention as an insurance against trouble arising from later inventors claiming them if they are carefully described, preferably with illustrations, in trade journals. The trade association should urge its members to see that every new thing done is announced either by a patent or by a proper descriptive publication. It might even be desirable to establish a trade journal under the control of the association, so that matters which might not be considered news or worthy of publishing by the commercial publisher may be published as an insurance against difficulties which may arise from an inability to prove a prior use beyond a reasonable doubt in order to invalidate a subsequently granted patent. A trade journal already established may be persuaded to establish a special section for this purpose at the expense of the trade association.

III

A knowledge of trade-marks which are in use in the industry is always useful and many times invaluable to the business man. An industrial association can be of great use to its members and to the public generally interested in the industry, if it can at its headquarters establish a trade-mark deposit bureau. The purpose of such a bureau should not be to give to the depositor any rights nor should it be limited to receiving trade-marks of its members. All members of the industry should be requested, urged, and, if possible, required to deposit at the association headquarters every trade-mark employed, together with a statement of the circumstances under which it is employed, the particular goods with which it is used, and the various colors or color combinations involved. The United States Patent Office has on file a large number of trade-marks. Its registrations, however, are limited by the Constitution to trade-marks employed in interstate or foreign commerce. Many trade-marks, therefore, which are employed locally are not eligible to registration in the Patent Office. Moreover, there are many identifying marks which by statute are prohibited from registration in the Patent Office, so that it is important for an industry to assemble its own

marks. The trade-marks registered in the Patent Office are arranged by classes, so that all marks relating to a certain industry are readily accessible, and it would be to the advantage of an industry to see that all marks registered with it are reported to the Patent Office, since the law prohibits registration of a mark already in use by another than the registrant, and the lists provided thus by the industrial association may serve as a protection against unauthorized registration. Much money is lost by innocently adopting a trade-mark which may interfere with a mark already in use. A trade association can help to avoid this needless waste by requesting or requiring its members to submit to the association every mark before it is adopted, so that headquarters may call attention to other probable interfering marks already in use.

The United States Patent Office publishes each week in the Official Gazette trade-marks which it has passed for registration, giving interested parties 30 days in which to oppose any registration. A trade association can protect its members by examining these current lists and notifying its members, who are likely to be injured by registration of a mark which may interfere with a mark known to the association.

A trade association can help its members in foreign commerce by constantly keeping them advised that in many countries trade-mark registration is well-nigh essential before entering into commerce, since selling goods before registration of marks in many countries may suggest to some unauthorized person residing in the country to register the marks and exclude the authentic goods or hold up the manufacturer for a payment. Furthermore, some countries have heavy penalties for importing goods bearing an unauthorized registered trade-mark, and in some countries such goods are confiscated, so that a trade association should keep its members informed not only with respect to United States trade-mark laws, but with respect to the trade-mark laws of foreign countries, particularly those with which its members have dealings.

It would not seem to be unreasonable to expect the trade association to prepare for circulation among its members a list of trade-marks used in the industry, corrected at least annually, and also a manual of information and warnings with respect to possible trade-mark difficulties, both domestic and foreign.

There is sometimes an advantage to the public in having a trade association adopt a mark which all its members may use, either in advertising matter or on labels attached to goods. While such an association's marks may be controlled and their unauthorized use enjoined in the courts, they cannot be registered in the Patent Office, since they are not technical trade-marks, being not the sole property of any individual and hence not clearly indicating source or origin.[1]

An industrial association may effectively serve the public and its own members by seeing that no one connected with the industry employs a label with a fraudulent, deceptive, or untrue statement on it. The United States Patent Office may refuse to register a trade-mark if it is employed in connection with such a statement, and since most trade-mark and unfair-competition litigation in the courts is conducted on the equity side, a plaintiff will not be given relief if he has associated his trade-mark or his goods with a fraudulent, untrue, or deceptive statement.

[1] The Patent Office publishes for free distribution a circular of general information about trade-marks, labels, and prints.

THE LIFE OF FREDERICK W. TAYLOR: A REVIEW[1]

By RICHARD A. FEISS

TO one who knew Frederick W. Taylor intimately during the last years of his life and who was at the same time engaged in a similar field of endeavor and was profoundly influenced by his work and his philosophy, the task of reviewing Copley's *Life of Taylor* is a particularly difficult one.

Copley's book gives not only an interesting picture of Taylor's life, but also a peculiarly comprehensive and instructive review of his work. The author undoubtedly had to undertake a considerable amount of research in the preparation of this biography, but fortunately there was a wealth of material available of which he made skilful use. In a simple and direct style he gives an excellent portrayal of the nature of a manufacturing enterprise and of the industrial environment in the 1880's and 1890's as the background for the absorbing story of a man in whom were combined with the highest ideals, the ability and perseverance to evolve and develop principles by the purely scientific method.

Fred Taylor was one of those rare individuals who had a well-defined philosophy which he applied to every activity of life. His work and his life were one. It is this that made his work so far-reaching and gave it the vitality that left an indelible influence upon those who came in contact with him.

At no time in the history of the world has industry been of such importance as it is to the present civilization. The result of this rapid and enormous development of the past century has brought with it far-reaching problems. Large-scale industry was in a chaotic state at the time Taylor[2] first made his acquaintance with its problems, and it was fortunate that a man with the vision, the spirit, and the ability of Taylor came into industry when he did. Taylor's contribution was not in the nature of a cleverly devised method or trick to improve processes. It was no "system" in the ordinary sense of the term, and cannot be compared with systems which are more or less cleverly devised to im-

[1] *Frederick W. Taylor: Father of Scientific Management*, 2 vols. Harper and Brothers, New York, 1923.

[2] Young Taylor was the son of well-to-do parents with an ancestral and social background of the highest type. He prepared for college at Exeter and successfully passed the entrance examinations for Harvard, but because of trouble with his eyes he was forced to alter his plans. His inability to go to college and then start in the world as one professionally trained must have been a severe blow. But we find that Taylor was not the usual young man. He did not sit around bemoaning his fate or enter upon an aimless program of self-indulgence at his parents' expense. Desiring to be self-dependent and finding it necessary to do something, he went to work at what was apparently the first thing he could find, which happened to be an ordinary laborer's job in the shop of a Philadelphia pump manufacturing company.

Taylor's disappointment at not being able to go to college and his subsequent action were characteristic of his entire life. He had more than his share of disappointments. Most of his later disappointments were brought about through the lack of appreciation or understanding on the part of others and added a pathetic touch to his life and work. But these only served to bring out that indomitable spirit which impelled him to do something of service and to go at whatever he did with a thoroughness and a tenacity that was unique.

prove methods or processes. Taylor's approach to his problems was that of a scientist. He had a clear-cut vision as to the purpose of industry and the problems to be solved. With his eyes always riveted on the problem as a whole, he nevertheless did not lose sight of the interrelation of all parts of the problem.

As an economist he kept clearly before him the concept that the object of industry was the production of commodities and services for the gratification of human wants and the enrichment of the community. The age of machinery had necessitated a specialization and a cooperation of large groups on a scale that had never been dreamt of before. This had given rise to new demands on human effort and human ability and had established a new problem in human relations which called for a new philosophy of organization.

The situation that existed when Taylor entered industry consisted of the minimum of cooperation and the maximum of antagonism. In the employer-employee relationship that had grown up, there were only a few outstanding instances in which it was realized that cooperative relationship was fundamental to the entire set-up of industry. Both employer and employee possessed false points of view, which precluded any basis for real cooperation and which assumed that their positions in industry were entirely antagonistic.

Taylor clearly saw that the salvation of industry involved the greatest possible increase in production at the lowest possible costs and a larger "prosperity" for both employer and employee. Such results could be obtained only by a realization on the part of both that their interests were common to those of industry itself. This meant that "friendly cooperation" was paramount. Taylor often said scientific management always involved a mental revolution of the employer and employee toward their work and toward each other.

Taylor realized that this revolution would not come about by abstract preaching. It could be brought about only by a slow process—by developing a technique of organization and methods based on sound principles and philosophy and applied in a scientific way to the specific problems in the plant. Everything Taylor did was to this end.

The revolution in the minds of management begins with the realization on the part of management that its function consists of full responsibility for both planning and executing in detail everything necessary for accomplishment. This puts upon management the specific responsibility of planning both what to do and how to do it. The duties of management are analyzed and the functions inherent in managing are set up. This results in functionalized management. Functionalized management is nothing more than specialization in management with the same benefits which are brought about by specialization in any other field.

Management properly has to devote itself as part of its function of leadership to the task of bringing about a revolution in the minds of the men in order to enlist their cooperation. The antagonism which to a great extent still exists and which is based chiefly upon the conflict in interest in the share of the results of industry, has to be overcome. The theory that all the interests of the employer and employee are opposed was almost universally held during Taylor's early years. He recognized that under the conditions that had grown up in industry this feeling not only existed, but that there was also cause for it so far as the employee was

concerned. The lack of a basis of co-operation necessary to industry itself was a thing that to Taylor's mind was wrong and had to be overcome.

The purpose of industry is to create wealth in the form of commodities and services for the use and benefit of the community. Those who take part in the creation of these commodities and services naturally look to industry for an immediate benefit. It follows that their incentive shall be a participation in the rewards of industry in accordance with their individual contribution. This principle is basic to the entire Taylor philosophy. From this point of view, the interests of both employer and employee are alike provided for in that as individuals each profits in accordance with his contribution.

Towards this end Taylor devoted himself to analyzing every activity and every responsibility in the business of production with a view to establishing an accurately determined measure and method for every kind of performance. It was this characteristic of thoroughness that not only made his contribution possible but made it inevitable that whatever came within the scope of his activity or interest was analyzed in detail by him in a thoroughly scientific manner. Being of an essentially practical and constructive mind, his analysis resulted not only in a synthesis as to which was the one best way in any given instance, but also in a formula or a generalization which embodied the correct principle.

The importance of developing a comprehensive and coordinated technique which involves not only the determination of method, but also the determination of reasonable time required for performances, is apparent. Such a technique permits of the establishing of a method for rewarding the individual according to the quality and quantity of his accomplishment. The development of some suitable form of payment, which is dependent upon performance and which is substantially greater for accomplishment in accordance with definitely set standards, is material if not essential in making effective the mutuality of interest that is inherent in and necessary for the proper conduct of business. When scientifically worked out and developed, the results effect that revolution in the minds of the men which replaces antagonism with cooperation.

Taylor's work has too often been viewed as a set system. He himself laid stress upon the fact that exact methods would and should be improved and developed, and that in all instances they should be modified to apply to a particular situation. But the principles that Taylor first enunciated as fundamental to industry must be applied 100% in order to get results. In application the analysis necessary will reveal that the problems of management are of a type common to all organizations.

Time study, routing, and other functions of planning are not in themselves scientific management, but are part of the technique of scientific management. It is with such aids that the science involved in the performance of any task is discovered and perpetuated for the benefit of the industry. Significant as was the work of Taylor and his associates in the discovery of high-speed steel and the ultimate publication of his 25 years of experimentation in the art of cutting metals, its real and impressive significance is apparent only when it is realized that its purpose was merely the discovery of the science involved in a group of machine shop operations as a logical incident in the application of scientific management methods.

The value of Taylor's work consisted not only in the expounding of the correct principles of organization and management but also in the practical illustration of them by application to the actual problems of management. In fact, the great value of Taylor's work is that the principles are but generalizations derived from shop experiments and practices. He demonstrated that the accomplishment of even the most ordinary kind of work involves a science, and the coordination of all the activities of an organization involves an art. As a result, management has become one of the great professions involving both science as applied to the handling of all materials and methods, and art as applied to the handling of all its human relations.

While the term "scientific management" can as yet be applied to the management of only a few organizations, the influence of Taylor's work, his sound principles, and comprehensive philosophy extends far beyond these limits. An increasing number of leaders, not only in industry but also in other communal activities, are influenced in their thinking and in their actions by the Taylor philosophy. So much of this influence is subconscious that there is at the present time no possibility of an adequate appraisal of its extent.

One who is interested in industry and the solution of its problems, one who is interested in the life and accomplishment of a practical man with a big vision cannot afford not to read this Life of Frederick W. Taylor.

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THE DEPARTMENTS OF THE HARVARD BUSINESS REVIEW

The material in the Departments of the Review presented by the Student Editorial Board is chosen with regard to its interest to business executives and to the possibility of utilizing most effectively the resources at the command of the members of the Board.

The first Department, "Summaries of Business Research," comprises summaries of the results of the investigation of various business subjects. "Case Studies in Business," the second of these Departments, was suggested by one of the outstanding characteristics of the Graduate School of Business Administration, the case method of teaching. Case studies are based upon the actual experiences of business concerns; to avoid disclosure of confidential material, however, it is necessary to disguise the names of the concerns. The last of the Departments contains critical reviews and short descriptions of new books of interest to business men.

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SUMMARIES OF BUSINESS RESEARCH

THE ADVISABILITY OF PURCHASING BONDS AT THE TIME OF ISSUE[1]

THE advisability of purchasing securities at the time of issue is a problem which constantly confronts investors. As a problem it is surrounded by prejudice and half-knowledge on both sides, some authorities maintaining that a new bond always tends to fall in price within a year or two after issue (the conditions of intrinsic value and security remaining the same), while others say that many new issues are bargains in view of their later rise in price and investment value. To investment bankers, on the other hand, the existence of prejudice against new issues, whether well-founded or otherwise, is a serious matter as long as American methods for marketing securities place a premium on the rapid and complete sale of new securities. If there is real support for the prejudice, prices of new issues must necessarily be set lower to offset for the investor the risk of later depreciation. The investor also should know the exact extent and strength of any such tendency in order that he may bargain accordingly in buying new issues.

The problem is concerned only with the action of new bonds as contrasted with so-called "seasoned" bonds; that is, bonds with a broad and well-developed market and of an age sufficient to have been tested by one complete business cycle. The method used here aims to make a broad comparison between the two classes by eliminating as far as possible the effects of erratic price movements in individual bond issues. A separation of the comparison into two steps was found advantageous. The first step, merely a comparison of the prices of new securities at issue with their prices at later dates, bears upon the problem of determining whether to wait a reasonable time to make the purchase of an intrinsically sound and otherwise desirable new issue or to take it as soon as offered. The second step in the comparison was the more important and the more complicated, being concerned with the relative values of "new" and "old" issues, judged by subsequent investment value. Both investors and bankers naturally tend to set up as a standard of value and price the older issues which are constantly available upon the open market. The investor is especially concerned with making a choice between the new bond offered him by a salesman and the well-known issue that has been traded on exchanges for many years. To arrive at a broad basis of comparison in this case was a difficult task, since market prices are often incomplete or inaccurate for some issues and since the standard of comparison must in any event be subject to criticism. In drawing general conclusions, however, allowance for these factors has been made.

I. The Actual Price of New Issues

The first part of the study is a simple price comparison for new issues with

[1] Based upon a thesis by A. W. Pearson, a member of the Student Editorial Board, in the course in Corporation Finance, Harvard Graduate School of Business Administration, May, 1924.

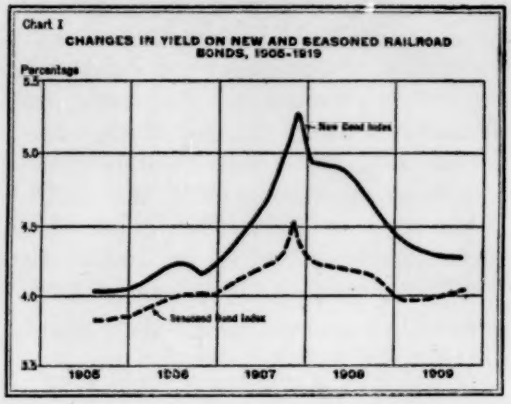
as concerns price movements *per se,* most hopeless. Yields are therefore

their own original prices over a period of months afterward. In making this comparison it is presupposed that the issue is originally desirable from the point of view of the investor and also that it will be available for purchase during subsequent months. The whole process is merely used as exhausting one possible approach to the general problem; it seems to yield much less satisfactory results than the second general section of the study, which represents another distinct approach.

Quotations for the 12 months after issue were obtained for 50 railroad bonds issued from 1919 to 1923, inclusive. These quotations for the most part were the high and low sales for the month, although in a few instances the bid and ask prices only were obtainable. The average of the bid and ask, or of the high and low, was taken, since it was felt that this was the most probable point at which one would buy or sell the bonds. These averages were then shown as percentages of the issue price for the different bonds.

The market quotations for the 12 months after issue[2] here appear to show a rather close approximation to the issue prices. The divergence in any month from 100% of issue price is insufficient to conclude that it made a difference when the bonds were purchased during this 12-month period.

It was next considered advisable to trace the course of new issues during a



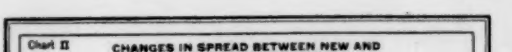
period of marked cyclical movement to support or disprove the above findings. It was found that during 1917 and 1918, years just preceding the last period of this kind, there were only two new listed railroad bond issues; but during 1904 and 1905, years just preceding the 1907 disturbance, there were ten issues of railroad bonds under new mortgages which were listed and had frequent quotations. A study of the fluctuations of these bonds over a period of about four years was then made. In order to counteract the effect of amortization the bonds were put on a yield basis, yields being computed for each January, April, July, and October. Chart I shows the fluctuations of these bonds as well as the fluctuations of an index of seasoned bond yields.[3] This chart substantiates the above conclusion that the new bonds fluctuate similarly with seasoned bonds and hence, so far

[2] It must be remembered that these prices have a slight tendency to rise during the year, due to the issue of many of the bonds at below one hundred.

[3] The seasoned bonds used for this index are those selected by Mitchell in his *Business Cycles*, pages 142 to 156. They were at the time high-grade railroad bonds.

Chicago and Eastern Illinois. Gen. Consol. and 1st M. 5s of 1939.
Missouri, Kansas and Texas. 1st M. Gold 4s of 1990.
Wabash. 1st M. Gold 5s of 1939.
Chesapeake and Ohio. 1st Consol. M. Gold 5s of 1939.
Chicago, St. Paul, Minneapolis and Omaha. Consol. M. 6s of 1930.
Chicago, Burlington and Quincy. Nebraska Ext. 4s of 1927.
Central Railroad of New Jersey. Gen. M. Gold 5s of 1987.
Chicago, Milwaukee and St. Paul. Gen. M. Series "A" Gold 4s of 1937.
New York, Chicago and St. Louis. 1st M. Gold 4s of 1937.
West Shore Railroad. 1st M. (Guar. by N. Y. C. R. R.) 4s of 2361.

It was next necessary to make or find



as concerns price movements *per se,* both types should be bought just prior to periods of declining bond yields.

Another section of the study was made for industrial bond issues. Five bonds were found with constant quotations issued during 1917 and 1918.[4] Since there is no accepted index of industrial bond yields, an index was made composed of the following bonds:

American Agricultural Chemical 1st 5s of 1928
Central Leather 20-year 5s of 1925
Armour and Company 1st Real Estate 4½s of 1939
Bethlehem Steel 5s of 1926
Lackawanna Steel 1st Cons. 5s of 1950

These bonds all moved similarly in extent and time; equally important, quotations were available for all of them. It is believed that they formed a fair index of high-grade industrial bond yields during the period covered. Here, as in the other instance, the yield moves closely with that of seasoned bonds.

II. New Securities Compared with Seasoned Securities

Instead of comparing the price movements of new and old securities within themselves over a stated period of time, this second method makes cross-comparisons of the two types of issues at short intervals during a similar stated period. The purpose is the same—to discover whether it is advisable to purchase new securities at the time of issue or at some later time.

Differences in maturity dates and rates of interest between the various bonds make any comparison on the basis of price for this part of the study almost hopeless. Yields are therefore used exclusively in making the comparison. Since yields are based on the market price, which is the resultant of the opinions of thousands of investors, there is involved the assumption that such a price is the test of the value of an investment over a period of time. Finally, 36 months after issue is arbitrarily set as the period during which a bond may be considered as "new," a period which will probably cover the time when the issue is reaching the exact level of price warranted by its investment value.

Railroad Bonds

Railroad bonds constituted the first group studied. The procedure used for the other bonds is nearly the same. Railroad bonds issued during 1919 and 1920 were found in the 1921 *Financial Review.* Issues for the later months in 1921 were found in the *Commercial and Financial Chronicle.* These lists of issues were then compared with the record of listing of the New York Stock Exchange as found in the *Financial Review* and the official record of listings. All new issues listed during this period were then examined in *Moody's Manual* to discover whether the bond was part of an issue put out under an open-end mortgage issue and, therefore, not a really unseasoned bond.

The high and low quotations for each succeeding three months after issue for a period of three years were then determined. It was assumed that a person buying or selling a bond would probably strike the average of the high and low rather than either extreme; a plain arithmetic average was therefore taken of these quotations. With the aid of a bond book the yields based on these averages were found.

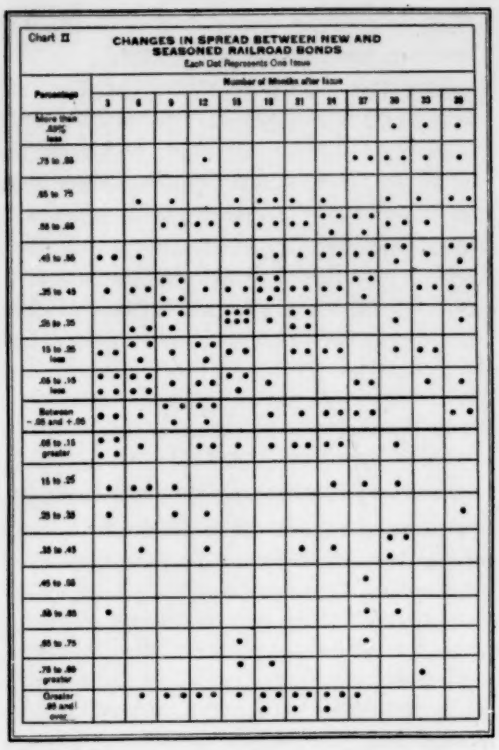
[4] Another bond, Chile Copper C. Coll. Tr. 6s "A" of 1932, was also issued during this period. This bond, however, had an unusually bad record and consequently was not used in the index as it would have movements dissimilar to those of the other bonds.

sue; two were *indifferent purchases;* the investing community. There is al-

It was next necessary to make or find an index of seasoned bond yields with which to compare the new issues. The index compiled by the Harvard Economic Service was finally selected.[5] There exist, however, certain objections to its use. This index is composed of bonds of the highest grade with long maturities, while the bonds issued during the period studied were of short maturities and of lower quality. The difference caused by these divergences will be noted later.

The new bonds and the old bond index were then arranged with dates corresponding, so that the spread between these new and seasoned bond yields could be found at issue and subsequent dates. Changes from the initial spread were computed and the results plotted on the adjoining Chart II. Variation in the number of changes shown is caused by the irregularity of some quotations. As noted before, a greater relative yield after issue compared to the index of seasoned bonds tends to show that the bond did not retain its original position with seasoned bonds and, hence, would have been a poor purchase at issue. Where the yield of the new bond becomes less as compared to the seasoned bonds, the new issue is attaining a higher relative value than at issue and would have been a good purchase.

A brief summary will be given of the



bonds studied, showing the date of issue, the tendency of a variation from the seasoned bond index to become greater or less, and the result of the purchase at issue as poor, good, or indifferent, viewed from the subsequent changes in its price level relative to seasoned bonds.

Of 20 bonds examined[6] during the period four were *poor* purchases at is-

[5] It is composed of the following long-maturity high-grade bonds:

Central Railroad of New Jersey. 1st M. Gen. Gold 5s of 1987.
Chicago and North Western. Gen. M. Gold Stamped 5s of 1987.
Penn. Railroad. Consolidated M. Gold 4½s of 1960.
Great Northern. 1st and Ref. M. Gold Series "A" 4¼s of 1961.
Atchison, Topeka and Santa Fe. M. Gold 4s of 1995.
Norfolk and Western. 1st Con. M. Gold 4s of 1996.
Northern Pacific. Gold 4s of 1997.
Union Pacific. 1st Lien and Ref. M. Gold 4s of 2008.
Lake Shore and Michigan Southern. 1st M. Gold 3½s of 1997.
New York Central and Hudson River. M. Gold 3½s of 1997.

For further information see *Review of Economic Statistics* for July, 1923, pp. 212-217.

[6] The following bonds were studied:

1. Lehigh Valley 10-year Collateral Trust 6s of 1928. 1918. *Good*
2. Pennsylvania Railroad General Mortgage 5s of 1968. 1918. *Indifferent*
3. Illinois Central 15-year 5½s of 1934. 1919. *Poor*
4. Central of Georgia Second 6s of 1929. 1919. *Poor*
5. Baltimore and Ohio Second 6s of 1929. 1919. *Poor*
6. C. C. C. and St. L. 6s Series "A" of 1929. 1919. *Poor*

Issued during a period when for the greater

and specific optimism) it is more sub- bonds, which would account for the

sue; two were *indifferent purchases;* fourteen were *good* purchases.

A striking characteristic of the results here was that all the bonds earmarked as "good" by their positions on the chart were issued at such a time that for the next three years yields were rising most of the time, while all the "poor" or "indifferent" bonds were issued during 1918 and 1919, so that during the greater part of the three-year period yields were falling. With this fact before us, it is worth while to seek an explanation with the help of the general theory of investment.[7]

One of the chief factors in the yield or return from bonds, which was used as the test of value, is the pure interest rate—the price for capital. The other is a premium or compensation for the risk affecting the safety of the principal —the chance that it will not be repaid. The interest rate changes with the changes in the supply and demand for capital, which occur in the short-time industrial cycles and in the long-time growth of industrial countries. The risk premium is in itself absolute; but its actual amount on any given security is the resultant of the estimates of thousands of investors who may be in the market—that is, pass judgment upon the security. By being measured in such a way, this premium is subject to peculiar fluctuations caused by the temper of the investing community. There is always some error in the estimation of this element; the amount of error forms one more factor in the total return, being either positive or negative.

It so happens that the two elements do not move synchronously. During the upswing of business, the pure interest rate increases in response to the increased demand for capital, and the risk premium decreases. When the crisis appears, followed by months of liquidation and stagnation, the premium for risk sharply increases. But during this same period the need for capital continues and the pure interest rate maintains itself on a high level; thus the curve for total yield from bonds continues to move up for some months after the downturn in business, because during that period the two chief elements in the yield are moving together. The interest rate changes first, followed by the risk premium, so that for a time in the early stages of revival the two move down together until the condition first mentioned reappears.

The important fact in such a comparison as is made here is that both the premium for risk and the amount of error in estimation seem to differ between new and seasoned securities, while the interest rate is the same. Once a security has been issued (at the actual time of issue it is affected by general

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(Footnote 6 continued from page 93)

part of the 36 months examined bond yields were falling:

7. Pennsylvania Railroad 10-year Second 7½s of 1930. 1920. *Good*
8. Atlantic Coast Line 10-year Second 7s of 1930. 1919. *Indifferent*
9. Delaware and Hudson 10-year Second 7s of 1930. 1920. *Good*
10. Louisville and Nashville 10-year 7s of 1930. 1920. *Good*
11. Chicago and North Western 10-year 7s of 1930. 1920. *Good*
12. Grand Trunk Railway of Canada 20-year S. F. D. 7s of 1940. 1920. *Good*
13. Canadian Northern Railway 7s of 1940. 1920. *Good*
14. Pennsylvania Railroad 15-year 6½s of 1931. 1921. *Good*
15. Chicago and North Western Second 6½s of 1936. 1921. *Good*
16. Northern Pacific–Great Northern Second 6½s of 1936. 1921. *Good*
17. Illinois Central Railroad Company 15-year 6½s Series "A" of 1936. 1921. *Good*
18. Canadian Northern Railway 6½s S. F. D. of 1936. 1921. *Good*
19. Grand Trunk Railway of Canada 15-year S. F. 6s of 1936. 1921. *Good*
20. Minneapolis, St. Paul and Sault Ste. Marie Railway Company 10-year 6½s of 1931. 1921. *Good*

[7] Dewing, HARVARD BUSINESS REVIEW, Vol. I, p. 451, "Economic Profits in the Return on Investments."

Chart III

bonds were added. The complete index

and specific optimism) it is more subject to attack by the opinions of investors during its early years than after it has gone through a full business cycle. Thus the amount of error in estimation of risk is being altered appreciably in early years. For some securities (a great number in this railroad group) the direction of alteration may be such as to make a purchase at original issue very advisable; this would be caused by too great an amount of pessimism surrounding the enterprise and so resulting in too low a price upon it by the issuing bankers. This is not true for other issues studied below.

There is a commonly accepted explanation of the weakness of new issues, namely the fact that syndicate managers deliberately maintain the price of issues at the slightly inflated level at which they were issued during the period of the syndicate and that prices relapse to their true level at the expiration of the agreement. This is based on the premise that new issues are usually priced slightly above their true value, and that their yield is thus slightly lower at issue than the true judgment of risk by investors at the particular time for the particular enterprise—that judgment being thwarted somewhat by the selling organizations of issuing and distributing houses. Nothing was found in the examination of all the bonds in the study to substantiate exactly such a premise, although there were several bonds in which a sharp decline was noted at about the time when the syndicate dissolved. The discovering of the exact time when syndicates dissolve is a difficult task, and no opportunity for doing so was possible within the limits of this study. This particular explanation, therefore, cannot be entirely supported by the results noted here.

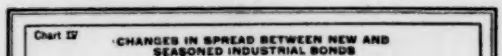
A special factor affecting railroad bonds, which would account for the sharp change in results between the early and later parts of the period studied, is the change of investment opinion toward railroads which became operative about a year after the Esch-Cummins Act became law. This new favorable attitude would have operated to reduce the original estimate of risk on new issues of 1920 and 1921, whereas the three-year period for the earlier bonds would not have been so influenced. Since the comparison is with older bonds, this would be further evidence that changes in the estimate of risk are greater for new bonds than for seasoned issues, as was concluded above.

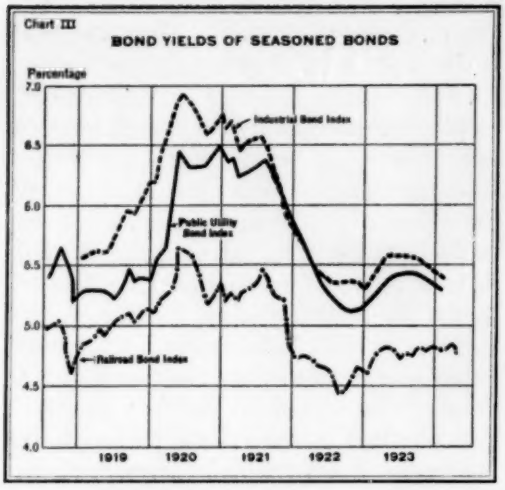
Another reason partly explains the results obtained. The bond index used was composed of long-term bonds, while most of the new issues were of short maturities. The shorter maturities tend to show wider ranges of yields than the more distant maturities. Thus, short-term bonds issued during the upswing of rates would reach higher levels than the longer maturities, whereas on the downswing the short-maturity bonds would reach lower levels.[8] This, then, is another part of the explanation for the variation which was found in the two periods.

To the investor, there is real importance in the separate factors of maturities and a possible later appreciation in price, as well as actual yield. Elementary investment wisdom dictates that during times of rising bond yields it is important to have bonds of short maturities in order to prevent a large depreciation in price. Similarly, in periods of falling yields long maturities should predominate in order to take full advantage of the probable appreciation in

[8] *Review of Economic Statistics*, July, 1923, pp. 212-217.

There was no sharp division in re-





price. It happened that most of the bonds issued during the period covered were of short maturities. This question affects the individual needs of an investment fund and does not directly concern the point of proof with which this article is concerned. It should, however, be kept in mind in examining results for other types of bonds. Similarly, and more important, the explanations advanced for the results recorded for the first group should be applied to these other results.

Industrial Bonds

The methods for industrial bonds in the selection and determination of yields for various periods, and the actual period treated, are the same as for railroad bonds. The index used on page 93 in the study of prices was not considered adequate as a standard of comparison; one bond, Central Leather 20-year 5s, which became really speculative, was dropped from the index, and four new bonds were added. The complete index was then:

Corn Products 1st 25-year 5s of 1934
Baldwin Locomotive 1st 5s of 1940
General Electric 3½s of 1942
Tennessee Coal and Iron 5s of 1951
American Agricultural Chemical 1st 5s of 1928
Armour and Company 1st R. E. 4½s of 1939
Bethlehem Steel 5s of 1926
Lackawanna Steel 1st Cons. 5s of 1950

The bonds used were about the only seasoned bonds available with constant quotations throughout the period unless the index were weighted still more heavily with steel and iron, which was not considered advisable.

On account of the work required the yields on these bonds were found only for January, April, July, and October for each year. These were plotted on Chart III, with the monthly yield on railroad bonds and monthly figures interpolated for the missing months in the latter part of 1918 through to the first quarter of 1921, when it was necessary to have yields for every month in order to find the spread between the new and seasoned bond yields at issue. It is believed that the error in this interpolation was slight.

The yields on the new issues were also found on each January, April, July, and October after issue. This resulted in some cases in the dates after issue being 2, 5, and so on, or 4, 7, and so on months after issue instead of 3, 6, and so on months. This should result, however, in no error in the conclusions.

Of twenty-two bonds studied [9] during the period: twelve were *poor* purchases; four were *indifferent* purchases; six were *good* purchases.[10] Chart IV shows the basis of these conclusions.

[9] It is important to note that the callable, convertible, and participating features in some industrial bonds caused the appreciation of value over a period of time.

[10] The following bonds were studied:

1. Wilson and Company Con. S. F. 6s of 1928. 1918. *Poor*
2. Wickwire Spencer Steel Corporation 1st 7s of 1935. 1920. *Poor*
3. Cuba Cane Sugar Conv. 7s of 1930. 1920. *Poor*

Footnote continued on page 97

yields on the averages of the bid and ask prices were found as in the case of

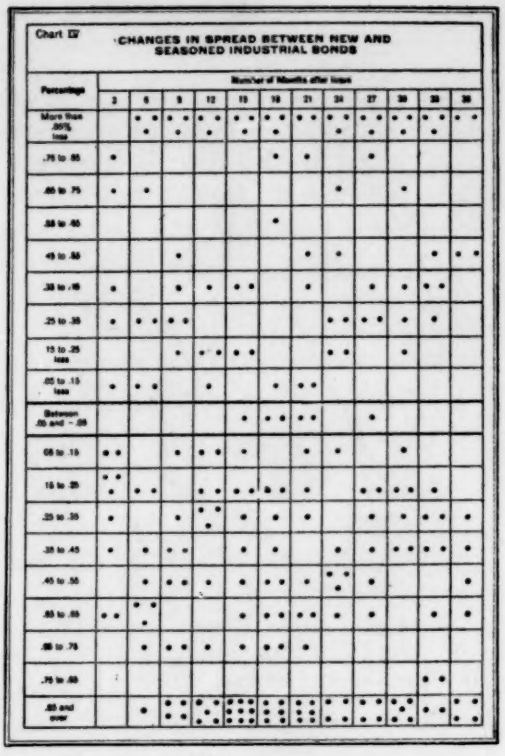
Heat and Power Company 1st G. 5s 1934

There was no sharp division in results between periods when yields were rising and falling, as occurred in the case of railroad bonds. The preceding footnote shows the division, however.

The conclusion is, then, that on the whole industrial bonds are a poor purchase at issue. It is probably true that estimates of risk and of ultimate value necessarily vary more from the truth in the case of industrial bonds than for other types because of fluctuations in industry.[11]

Public Utility Bonds

The study of public utility bonds brought considerably more difficulty and a necessity for more qualification in the conclusions, on account of the few listings of such bonds on the stock exchange and resultant fewer reliable quotations. All issues of $3,000,000 and over were found in the *Financial Review* and the *Chronicle* for 1919, 1920, and the first part of 1921. The listed bonds were noted and their high and low quotations obtained as with the other securities studied. A search was then made in the Quotation Supplement of the *Chronicle* for bid and ask quotations on the other bonds. The average of the bid and ask prices was thought to be the most probable place at which a sale would take place. The



(Footnote 10 continued from page 96)

4. General Electric 6s of 1940. 1920. *Good*
5. Atlantic Fruit Company Deb. 7s of 1934. 1919. *Poor*

Issued during a period such that bond yields declined for the greater part of the 36 months:

6. United States Rubber Second 7½s of 1930. 1920. *Good*
7. Pan-American Petroleum and Trans. 1st Lien 7s of 1930. 1920. *Indifferent*
8. Diamond Match Company 15-year 7½s of 1935. 1920. *Indifferent*
9. Westinghouse Electric and Manufacturing Company 7s of 1931. 1920. *Good*
10. Virginia Carolina Chemical Company 7½s of 1932. 1920. *Poor*
11. Cerro De Pasco Copper Corporation Con. 8s of 1931. 1920. *Good*
12. Standard Oil Company of California Deb. 7s of 1931. 1920. *Poor*
13. Steel and Tube Company of America 7s Series "C" of 1951. 1921. *Poor*
14. American Agricultural Chemical Company 1st Ref. 7½s of 1941. 1921. *Poor*
15. Atlantic Refining Company 6½s Deb. of 1931. 1921. *Poor*
16. Tide Water Oil Company 6½s of 1931. 1921. *Poor*
17. Sharon Steel Hoop Company 1st M. S. F. 8s of 1941. 1921. *Poor*
18. Cuba Cane Sugar Company 1st M. Coll. Tr. S. F. 8s of 1931. 1921. *Good*
19. Invincible Oil Corporation 8s of 1931. 1921. *Indifferent*
20. Packard Motor Car Company 8s of 1931. 1921. *Indifferent*
21. Marland Oil Company of Delaware S. F. Part. 8s of 1931. 1921. *Good*
22. Mexican Petroleum Company, Limited, of Delaware Con. S. F. 8s of 1936. 1921. *Poor*

[11] Among the bonds listed in Footnote 10 are several examples, well-known in financial circles, of over- and under-pricing by issuing houses. In one case, especially, the investor would have profited by buying at issue one of these—a bond of one of the country's greatest industrial units—contrary to the majority of cases.

There are some important limitations here which must be emphasized. The somewhat weakened by the numerous practical difficulties encountered, there

yields on the averages of the bid and ask prices were found as in the case of the other bonds.

Still more difficulty was found in an attempt to make an index of seasoned public utility bonds; eight bonds were finally found with regular quotations. These bonds were:

1. *Street Railway bonds:*

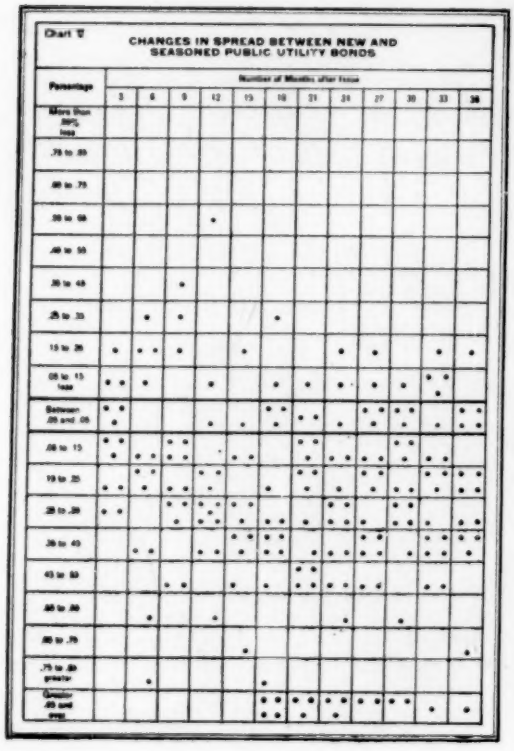
Detroit United Railway 1st Con. G. 4½s of 1932
Manhattan Railway G. 4s of 1990

2. *Telephone and Telegraph bonds:*

American Telephone and Telegraph Company Coll. Trust 4s of 1929
Pacific Telephone and Telegraph Company 1st G. 5s of 1937

3. *Gas, Electric, Heat, Light and Power bonds:*

Laclede Gas and Light Company Ref. and Ext. G. 5s of 1934
New York Gas and Electric Light, Heat and Power Company 1st G. 5s 1934
Pacific Gas and Electric—California Gas and Electric Unif. and Ref. G. 5s 1934
Utah Power and Light Co. 1st G. 5s of 1944



The two street railway bonds were discarded immediately, because their fluctuations were erratic and because no new traction bonds were issued during the period. There were only two telephone bonds issued, so that these bonds were also discarded.

This left only the four gas and electric bonds. The rate of the Laclede bond, however, tends to vary from the others, showing great weakness in 1921 when it reached a high yield of 8.75%. On examining the income account of this company, it was found that its earnings were poor; in 1921 earnings were only 10% above bond charges. The other bonds all moved similarly in extent and time, having earnings about twice the fixed charges during the period. It was decided, therefore, to eliminate the Laclede bond, since it plainly did not belong in this group. It is realized that three bonds are a narrow base on which to build an index. The similarity of fluctuations among themselves, and as a group with the industrial and railroad bond yield indexes, tends to support the belief that the index is not unsound. As in the case of industrials the yields for other months than January, April, July, and October were found for 1919, 1920, and the first quarter of 1921 by plotting with railroad bond yields on Chart V, and then reading missing months from the chart. Chart V shows the basis of conclusions of eighteen bonds examined [12]: *eleven* were *poor* purchases at issue; *five* were *indifferent; two* were *good.*

[12] *See page 99 for footnote.*

Care must be exercised in the use of any of these systems to avoid too many vari- to a year, but the philosophy of the plan is always the same. Hence the

There are some important limitations here which must be emphasized. The first is that the use of an average of bid and ask prices introduces a factor of error in the determination of the yields. The second is that utility bonds cannot, in many cases, be freely purchased in the open market, so that price movements are not really representative of value. Subject to these limitations, the results here indicate that public utility issues are poor purchases at issue, in comparison with seasoned bonds, regardless of the conditions in the bond market.

Despite the fact that the results are somewhat weakened by the numerous practical difficulties encountered, there is definite evidence in favor of the prejudice of investors against new issues. It is true that the situation in regard to railroad bonds varied according to the general market conditions; but for industrial and public utility issues, there was a real weakening of new issues in comparison with old or seasoned issues over the subsequent three years after issue. It is felt that the method used is sound, that the investigations over given periods of time were thorough, and that sufficient allowance was made for qualifying influences.

[12] The following bonds were studied:

1. Brooklyn Edison Company Gen. M. 5s Series "A" of 1949. 1919. *Poor*
2. Great Western Power Company of California 1st and Ref. M. S. F. 6s of 1949. 1919. *Good*
3. Nebraska Power Company 1st M. 5s of 1949. 1919. *Poor*
4. Northern Ohio Traction and Light Company Second 6s of 1926. 1919. *Poor*
5. Dallas Power and Light Company 1st M. 6s of 1949. 1919. *Indifferent*
6. Duquesne Light Company 1st M. and Coll. Tr. 6s of 1949. 1919. *Good*
7. Pennsylvania Public Service Corporation 1st and Ref. 6s of 1929 "A." 1919. *Poor*
8. General Gas and Electric 10-year Second 6s of 1929. 1920. *Poor*

Issued at times such that yields declined for the greater part of the 36 months' period:

9. Adirondack Power and Light Company 1st and Ref. 6s of 1950. 1920. *Indifferent*
10. Pennsylvania Ohio Power and Light Company 1st and Ref. M. 7½s of 1940. 1920. *Poor*
11. Wisconsin Electric Power Company 1st M. Guar. 7½s of 1945. 1920. *Poor*
12. Niagara Falls Power Company 1st Cons. M. 6s "A" of 1950. 1920. *Indifferent*
13. Pacific Gas and Electric Company 1st and Ref. M. 7s "A" of 1940. 1920. *Poor*
14. Ohio Power Company 1st and Ref. M. 7s "A" of 1951. 1921. *Poor*
15. Oklahoma Gas and Electric 1st and Ref. 7½s "A" of 1941. 1921. *Poor*
16. Pennsylvania Power and Light Company 1st and Ref. 7s "A" of 1951. 1921. *Indifferent*
17. Puget Sound Power and Light Company Gen. and Ref. M. "A" 7½s of 1941. 1921. *Poor*
18. Mississippi River Power Company S. F. Deb. 7s of 1935. 1921. *Indifferent*

METHODS OF WAGE PAYMENT: THE DAY WAGE

THIS article (the third and last of the series on systems of wage payment), deals with miscellaneous premiums and bonuses, profit-sharing, and the like, and with the day-wage system of payment.

In previous issues, various systems of wage payment to stimulate production have been discussed. It has been the more or less common fault of all of these that there is the tendency to secure quantity at the expense of quality. In addition, there has usually been no compensation for other desirable qualities such as regularity of attendance. It is possible to provide direct financial incentive for any desired measurable quality in the shape of a bonus, which may be superimposed upon any other system of wage payment. Such bonuses, if properly adjusted, will stimulate the efforts of the workers in the desired direction. For instance, a rubber shoe company uses a rate in the fabric-cutting room described as a differential piece rate. The percentage of waste is carefully determined for each worker, and the worker is paid a rate per piece cut, the rate varying 5% for each per cent of variation in the percentage of waste.

The principal objection to the day-rate system is that it represses the su- ployer and employee was not only possible; it was the general rule. This close

Care must be exercised in the use of any of these systems to avoid too many variations or too much complication. If there are too many variables, the worker will not feel the direct effect of any single one, and a large part of the incentive will be lost.

Of various systems, such as profit-sharing, pensions, insurance, and stock ownership financed in whole or in part by the management, little will be said. These types are not true forms of wage payment, in that the amount received by the worker does not vary directly with his individual performance in the shop. Such payments, made as a rule annually, cannot definitely be forecasted by the worker, and are of slight value in providing an incentive to higher output per man per hour. In cases where these systems have improved the efficiency of the worker, the result has been based primarily upon an already existing feeling of good-will on the part of the worker toward the management, rather than upon any idea of swelling the amount received. Many of these systems are cumulative in their effect, and thus act as an incentive to continued service, more especially among the workers who are receiving the benefits. It has been the experience of some companies, however, that the average worker would prefer to have the money in the pay envelope, and that greater good-will could be obtained if the excess profits were spent in improving working conditions.

Payment on the Basis of Time

A scheme whereby the employer pays the employee for the time spent, irrespective of other considerations, is commonly referred to as *day-work*. Actually the unit of time upon which the wage is based may vary from one hour to a year, but the philosophy of the plan is always the same. Hence the common term, *day-work,* is used.

Day-work was originally used long before the modern development of mass production in industry. It is still used in many instances. As with piece-work, it is interesting to note that the philosophy of the day wage still persists to such an extent that it is one of the prominent methods now used in industry.

For the purpose of analysis day-work may be divided into two classes. One type is that in which every employee of a certain craft classification receives the same wages regardless of individual qualifications. The other type is that in which the principles of scientific management are applied to the extent that work is carefully planned ahead for each employee and records are kept of the individual performance of the workman. Each craft group is broken down into a series of promotional steps carrying higher wages, these steps to be gained by the employee on the basis of individual performance. For want of better terminology, the first type listed is called elementary day-work and the second scientific day-work.

Because it is simple and can be used with any type of work, the day-wage system is often employed without due consideration being given to a study of the conditions conducive to its success. It is often used without thought being given to the requirements of the job, and much of the criticism of day-work results from experiences gained in such use.

Disadvantages of Elementary Day-Work

Much of the present-day criticism of day-work arises from inexperience with the elementary type of day-work. There usually are two objections raised.

be derived from time and motion study can be capitalized under the day-work

quality of his output as well as the quantity. The workman can express his

The principal objection to the day-rate system is that it represses the superior man. Ambitious employees reach the conclusion that they receive no direct benefits from hard work. An indolent fellow employee performing less work apparently receives the same reward. This criticism assumes that wages are the all-important consideration to an employee. It is claimed, on this basis, that a man who receives equal wages for less effort is recognized by the management as of equal value with the ambitious employee. Under these conditions, the logical tendency is for all the workmen to regulate their production so as to conform to the performance of the least energetic or least skilled.

The second criticism of day-work arises from the reasoning that the rate of production is variable and impossible of control or estimate. On this basis wages become an uncertain element of cost.

Scientific Day-Work

It is believed that these criticisms of day-work are erroneous. They are true only in case the conditions within the organization are such that they are allowed to become true. The philosophy of the day-work is not proved to be in error. The fault lies, rather, with the management for attempting to use day-work under improper conditions. It has been pointed out that the chances for success of the piece-rate method are enhanced by certain conditions of administration. It is felt that there are also certain conditions conducive to the success of day-work.

In the early days of wide-spread use of day-work, industrial conditions were entirely different from those now obtaining. Industrial organizations were small and close contact between employer and employee was not only possible; it was the general rule. This close contact between employer and employee contributed largely to the successful use of day-work.

With modern methods of mass production in large organizations this contact cannot be maintained. It is believed, however, that new mechanisms can be used to the same end. These mechanisms are contained in the outline of the scientific wage system given below.

The ordinary day-wage system should be elaborated to include a definite standard of performance set for each task by time and motion study and a series of wage classes in each of the craft groups. Promotion to succeeding wage classes should be made on the basis of each workman's performance as evidenced by complete records.

A brief consideration of the outline of the plan indicates that it is calculated to overcome the repression of talented men through the provision for promotion when warranted by the workman's performance. The establishment of a definite standard for each operation will also assist in the realization of a more definite control of costs than is possible with elementary day-work.

The principal criticism of scientific day-work is that the provision of promotional steps within the craft groups is theoretically but not practically feasible. However, it is believed that no more difficulties will be encountered in the administration of this plan than with any of the modern systems offering direct money incentive for increased production. The time and money spent in keeping records of the workman's performance and in studying and teaching proper performance should be no greater than in the Taylor, Emerson, or Gantt system. Any advantages to

tity, or upon a combination of the two as desired.

it must pay to the average worker at least the going wage for the type of

be derived from time and motion study can be capitalized under the day-work system. Wherever the expense incurred by such studies is justifiable under the Taylor, Gantt, or Emerson system, it is likewise warranted under this system and the resulting records should be used as a basis for establishing wage classes and promotions.

The scientific day-wage system has several desirable features which do not appear under any of the other systems. It is based on the assumption that workmen are, in general, honest and will readily respond to good treatment. The desirable features of this method of payment are discussed below in the order of their importance.

First. It is believed that the provision for promotional steps, attainable on the basis of performance, is a better type of incentive than that given under the piece-rate system or the bonus system. With the two other types the incentive is furnished through a prospect of greater earnings; that is, on a direct financial basis. This places labor relations on a sordid basis and accentuates a workman's greed. His primary interest is not in the size of the pay envelope. His contentment is more directly influenced by the assurance of steady work and by the respect accorded him by the management and his fellow workers, though, of course, his wages must be such as will allow him to satisfactorily provide for himself and family. By promoting the workman to a higher plane in the organization when the records of his performance show an increased efficiency, recognition is given the desire for respect as well as the desire for more pay.

Second. Under the system recommended, careful work on the part of the workman is favored. The records of his efficiency should consider the quality of his output as well as the quantity. The workman can express his ideals of craftsmanship and his pleasure in a perfect output without loss to himself. This is a distinct asset with certain types of production where quality is paramount.

Third. The day-wage system adjusts itself fairly well to class distinctions among the workmen. Where discontent arises in any class, it is usually due to a desire to raise the wages of the class as a whole, rather than those of some talented individuals within the class. If the wage-earner is content with the standards of life of his class, he is satisfied with wages which meet the requirements of this class standard. Expenses appear to be chiefly a function of time, and the wages to cover these expenses will then likewise appear to be chiefly functions of time—so much per day or week.

Fourth. The calculations involved in the preparation of pay-rolls under the day-wage system are simple. Adjustment to the varying costs of living may be made in the manner now used, by paying bonuses above the day rates. If a further incentive toward confidence and cooperation of the workmen is desired, some profit-sharing system may be added without difficulty.

The scientific day-wage has a very wide field of application. With any of the other systems, it is always necessary to pay a part of the labor on the day rate, either because it is not possible to measure the performance sufficiently accurately for incentive payment or because it is difficult to maintain quality under such payment. With a day-wage payment system, however, these performances fall in naturally with the rest of the work, instead of being treated as exceptions. The rating of the men can be upon quality instead of quan-

tity, or upon a combination of the two as desired.

Many of the difficulties encountered under other systems are eliminated. To a large extent, the tendency to high speed under the piece rate, and the difficulty arising out of its guarantee are minimized. The length of service and other factors can be taken into consideration in the rating of the employees. The transition from regular day rates to scientific day rates is much easier than a change to any of the incentive systems. It can proceed conveniently, without difficulty or friction, either in the shop or in the pay office.

Conclusions

The discussion of the day-wage system concludes the series on systems of wage payment. As was set forth in the first article, the underlying idea rather than the form is the more important. No matter what the wage system, it must pay to the average worker at least the going wage for the type of work; in the case of an incentive system, where the worker is expected to produce more than the average, the wages must be above average. In any case, management and control is an all-important factor. Good management can often succeed regardless of the actual form of wage payment. But that same good management can be strengthened and preserved for the future by the adoption of the best possible methods in its most important function—relations with the workers. Honesty in the use and administration of any system is, of course, an additional requisite for its success.

The possible forms of payment have been examined in these articles in the light of their adaptability to varying conditions of production and the important effect that those conditions have upon the selection of a method of payment for a particular plant.

Annual interest charges as of August [illegible] on all mortgage bonds out- pledged under the indenture of this issue.

CASE STUDIES IN BUSINESS

METHODS IN THE DISTRIBUTION OF SECURITIES TO INVESTORS BY AN ORIGINATING HOUSE

THE Benton Company is a prominent originating and retailing investment banking firm. During the fall of 1923, it purchased [1] three new issues of securities within a short period of time. It was necessary for the company to determine the method of distribution to be used for each. In the past it had used all the usual methods of distributing an issue through other houses to the public, as well as through its own retail department.

Description of Issues

One of the new issues purchased was a $4,000,000 issue of the Mid-Mountain Power Company, which operated electric light and power properties in western Pennsylvania. Located in the company's territory were many diversified industries including iron and steel works, anthracite coal mines, steel car works, automobile works, silk mills, and cement plants. The electric generating stations owned by the company had an aggregate capacity of 160,000 kilowatts and were located within a few miles of a coal supply. The capacity of these stations had been increased constantly to meet the increasing demands for electrical service in their territory.

The proceeds of the bonds were to be used to reimburse the company for capital expenditures incurred and to provide funds for new construction then in progress. They were secured by a first mortgage upon a substantial portion of the company's property and by a second mortgage on the remainder, subject to $16,500,000 of outstanding bonds. Eleven million dollars par value of the current issue already was outstanding. Further issues under the mortgage were restricted by a provision that additional bonds could be sold only up to 75% of the cost of constructed or acquired property, and only when earnings applicable to interest charges were twice total charges, including those on the proposed issue, during the preceding 12 months.

Earnings of the company were as given in Table I, below.

[1] Lack of space prevents a discussion of "purchasing groups" and "banking groups"—methods of distributing the risk of purchase among several originating houses.

TABLE I.—MID-MOUNTAIN POWER COMPANY—EARNINGS, 1920-1923

12 Months Ended August 31	Gross Revenues	Operating Expenses, Rentals, and Taxes	Net Earnings (Before Depreciation)
1920	$ 7,718,143	$5,407,274	$2,310,849
1921	9,530,959	6,495,953	3,035,006
1922	11,479,754	7,579,982	3,899,772
1923*	14,979,986	8,858,424	6,121,562

*Includes earnings, for the entire 12 months, of properties recently acquired by the company.

Annual interest charges as of August 31, 1923, on all mortgage bonds outstanding, including the current issue, were $2,039,230. Depreciation of about $3,100,000 had been charged off during 1923.

The bonds were to be offered at 99 and interest, to yield 6.07%. They had been purchased so that the total spread between the purchase price and public offering price was approximately 3½ points.

The second block of bonds in question was a $25,000,000 issue of consolidated mortgage bonds of the J. M. Morton Company, a large independent iron and steel manufacturer. About $40,000,000 of this issue were already outstanding. The company's products were well diversified, and low-cost production was made possible by the ownership of valuable sources of raw material. The proceeds of these bonds were to be used to retire a bond issue of the Interstate Steel Company, recently acquired by the J. M. Morton Company, and to replace a maturing issue of the latter company's notes. The bonds were secured by a mortgage on the plants and raw-material properties of the company (including those of the Interstate Steel Company) having a depreciated book value of $265,000,000, subject to $101,500,000 of underlying bonds, of which $25,000,000 were pledged under the indenture of this issue.

Earnings of the J. M. Morton Company were as given in Table II, below.

Combined earnings of the J. M. Morton Company and the Interstate Steel Company during these eight years averaged 3.6 times the total interest charges on all funded indebtedness, including the current issue. During this period $65,500,000 of earnings had been paid in cash dividends by both companies, and $115,000,000 (after depreciation, depletion, and other charges) had been reinvested in the business.

The bonds were to be offered at 93 and interest, to yield over 6%. There was about 4.30 points gross spread.

Finally, there were equipment trust certificates issued to the amount of $4,275,000 by the Middle States Southwestern Railroad. They represented slightly less than 80% of the cost of new standard railroad equipment to include 6 Pacific passenger locomotives, 30 light Mikado freight locomotives, 500 55-ton steel underframe composite gondola cars, 1,000 55-ton steel underframe composite hopper cars. The total cost was to be $5,345,280.

The Middle States Southwestern Railroad comprised a system of about 1,500 miles of road, extending across the Middle states and connecting im-

TABLE II—J. M. MORTON COMPANY—EARNINGS, 1915-1922

Year	Gross Sales	Depreciation, Depletion and Taxes	Available for Interest
1915	$146,513,795	$ 4,716,000	$20,105,409
1916	216,284,556	14,350,786	47,366,524
1917	298,929,531	17,911,641	36,067,719
1918	448,410,808	31,510,366	25,678,403
1919	281,641,908	12,566,152	24,875,066
1920	274,431,236	13,941,514	22,410,039
1921	147,794,353	6,002,715	19,751,962
1922	131,866,111	6,499,189	13,294,524

portant western lines with lines to the Atlantic seaboard. The income available for fixed charges for the seven years ended December 31, 1922, was twice the annual charges for that period. For the six months ended June 30, 1923, such income amounted to $6,429,000, which was more than 3.5 times fixed charges for the period.

The certificates were to be offered at the following prices and yields:

TABLE III

MIDDLE STATES SOUTHWESTERN RAILROAD —PRICES AND YIELDS OF TRUST CERTIFICATES

Maturity	Price	Approximate Yield
August 1, 1924	99.76	5.25%
August 1, 1925	99.44	5.30%
August 1, 1926	99.04	5.35%
August 1, 1927	98.58	5.40%
August 1, 1928	98.27	5.40%
August 1, 1929	97.97	5.40%
August 1, 1930	97.69	5.40%
August 1, 1931	97.43	5.40%
August 1, 1932	97.18	5.40%
August 1, 1933	96.94	5.40%
August 1, 1934	96.71	5.40%
August 1, 1935	96.50	5.40%
August 1, 1936	96.30	5.40%
August 1, 1937	96.11	5.40%
August 1, 1938	95.92	5.40%

Accrued interest to be added in each case.
The gross margin on this issue was about 2½%.

The Syndicate

Among the general methods of distribution possible for these three issues, the selling syndicate is the most common. By this method the risk of purchasing an issue from another company can be distributed among a number of other investment houses. In the case of large issues, or for a smaller issue which might appeal indifferently to investors and require a long period for sale, this method relieves the issuing house of the risk and expense involved in keeping its capital tied up for a long period. The old theory and purpose of underwriting [2] and the purpose of actual sale to investors may be achieved by this method.

The issuing house, or small group of houses called the syndicate managers, makes up a participation list from the many retailers whose records it has on file and with whom it has had previous relations. A larger house, which may at other times also originate issues and with which relations are friendly and close, will be allotted large blocks in this list.

In fulfilling the pure selling function of the syndicate, the retailer assumes liability for an amount of bonds equal to or larger than his participation; these he purchases and must sell. "Participation" is only the amount to be guaranteed, or underwritten, by each dealer and can theoretically be entirely separated from the number of bonds sold; but the total subscription for sale is not limited by the size of the participation. If the issue is a failure on account of many refusals of participation, each retailer is responsible for his accepted participation only—and not for other

[2] Underwriting, as the term was originally used in England, meant simply a guarantee of success for the issue—a form of insurance, with the premium expressed as a number of points profit on the price of the security. There was no necessity (although there was the possibility of doing so upon favorable terms) for the underwriter to buy any of the bonds or stock for himself or for resale to others, except in so far as the issue remained unsold at the end of a specified period of time. Today, in England, large insurance companies and investment trusts participate in underwriting agreements that expressly allow them to buy large blocks of the issue at a favorable price, even though the issue is successful. This is particularly advantageous to them in the case of a little-known, low-priced issue, which comes into public favor at the end of a year or two at a heavy appreciation in price, when the bonds can be resold at a large profit.

bonds left in the hands of the syndicate managers.[3] Small retailers depend for their supply of bonds upon being included in this "syndicate list," and since their continued position and reputation among issuers depend upon the prompt and complete acceptance of participations, speed in offering and so making a quick survey of the issue's success is facilitated for the offering house. The possession of a large amount of other bonds may often serve as an adequate excuse for nonparticipation. Where relations between houses are fairly close, a frank refusal may be accepted. Very rarely, partial refusals are possible. An issuing house almost always intends (there are some notable exceptions) and is equipped to sell a portion of the bonds it is distributing, and is thus able to care for bonds left undistributed. The amount of participation is determined from the records of past offerings and from a figure furnished as a general guide by the retailer, when he is first placed upon the lists, and revised from time to time.

The total subscription, furthermore, is flexible in amount. A retailer's indicated participation is considered as a minimum, and he is usually allowed to subscribe for an additional amount up to a reasonable limit, the point of reasonableness being the syndicate manager's estimate of his financial standing and selling ability. Some of the effects of these extra subscriptions will be discussed below.

The retailer as a member of a syndicate has entered into a definite contract for the purchase of bonds, and the managers have definitely sold them; but there are many provisions in the contract which allow the managers to control the methods by which the retailers dispose of the issue and by which the sale becomes partially provisional.

One of these is a clause either expressly allowing or prohibiting the interselling of bonds among members of the syndicate without direct reference to the syndicate manager. Where marked differences in the absorptive power of the market in different cities appear, it is advantageous to allow this transfer of bonds in the shortest possible time. It is accomplished at a specified reduction in price. The inclusion of such a clause in syndicate agreements is fairly recent.

Another group of clauses is aimed to prevent the selling of bonds by syndicate members to brokers who might immediately offer them for resale at a discount from the offering price and so depress the market at a time when selling pressure is greatest. Part of the blame for this practice rests on the retailer, who feels obligated in many cases to accept bonds for which he knows he has no real market, in order to maintain a good record of acceptances on the books of the issuing houses. They do this, not because issuing houses attempt to force bonds upon them, but rather because the practice of these houses is to seek out the weaker distributers and either reduce their allotments in the future or eliminate them from the syndicate list. Part of the blame arises from the general necessity inherent in the method of syndicate distribution of securing rapid sale for many successive issues.

Unable to marshal enough capital to carry the bonds, retailers seek brokers who will accept large blocks of bonds, provided there is a discount. Resale at

[3] In an older form of syndicate, now seldom used, syndicate liability for unsold bonds was determined in relation to the total issue, rather than to the individual subscriptions. Thus a participant who had sold all his bonds might still have to accept remaining bonds in proportion to his own subscription.

a cut price by these dealers is necessarily harmful to the high-pressure, American method of sale which characterizes all our security distribution. Trouble arises when the issuing house discovers the bonds and traces them to the particular retailer to whom they were allotted; it usually makes this discovery in the regular process of buying up all bonds of the issue which are offered below the offering price during the stated period of the syndicate, thus maintaining the "market" price very near to the offering price. For this purpose of supporting the market, it is advantageous to reduce the number of dealers offering the bonds to a minimum; or better, to have them listed on some exchange, so that the market condition can be kept well in hand without a constant "scouting" process to find small offerings and take them up. The discovered seller is always penalized for his offense in one way or another.

The variation of the practice known as "investment guaranteed" selling is also prohibited by large originating houses, some of which make special efforts to discover and punish the practice. Under this arrangement the broker who buys the bonds agrees to resell them to investors only. If the bonds reappear on the market, he agrees to repurchase them, provided that the syndicate managers discover the bonds and force the retailer to rebuy them (this is a usual penalty for the practice; another is to reduce the profits of the syndicate returned to the member at fault). The prevalence of the whole difficulty is in direct ratio to the activity of the market—that is, the necessity of absorbing closely successive issues is a distinct burden upon retailers; if the number of issues appearing is moderate, there is very little trouble.

It has been shown that a retailer is often allowed to subscribe for additional bonds above his offered participation. In a good market he may become overoptimistic and subscribe for a large block of bonds, partly because he believes he can sell them and partly because he believes that other houses will also apply for large additional amounts, and that as a result he will merely receive a pro rata fraction of his application. Being disappointed in either of these beliefs, he meets the difficulties outlined above. Trouble more often arises from these causes than from the fact that the dealer is unable to take his ordinary allotment: in the latter case he will not long exist, for the house will either cut his participation amount or remove him from its list. But the tendency to oversubscription remains, being desired by both parties either to insure or increase the profit margin involved.

Firm Withdrawals

Allied with this whole problem of satisfactory distribution among retail dealers in a syndicate, but arising from another angle of it, is the practice of allowing "firm withdrawals." Formerly, after the oversubscription of an issue by retailers, the practice was for the syndicate managers to allot the available amount of bonds pro rata among all the applicants; if the issue were 100% oversubscribed, dealers who had applied for only 50% more than their regular participation in accordance with their estimate of the issue's popularity (whereas others had subscribed for 200% more) would be forced to accept a reduction affecting their original participation. This caused a great deal of inconvenience and ill will among investors to whom it was impossible to deliver the amount of bonds purchased. To remedy this recurring situation, issu-

ing houses developed the practice of guaranteeing delivery on a stated per cent (ranging from 60% to 100%) [4] of the participation—that is, "firm withdrawals" from the supply of bonds up to that amount. By doing this, the syndicate manager secures the good-will and better cooperation of dealers. He is obligated, on the other hand, to make a less wide-spread offering of the issue and to watch the amounts of additional subscriptions during the height of the period of distribution more closely, since he is under contractual obligations to deliver a certain amount of bonds "firm." It is claimed that the rapid growth since the war of the inclusion of a "firm withdrawal" clause is partially the result of greater competition in the field of organization of issues by the entrance of many new organizations into the field.

For the retailer, this clause in a syndicate agreement is a distinct advantage in relieving him of uncertainty, allowing him to make definite sales to his customers in the shortest time, and reducing the necessity of estimating the popularity and selling appeal of a forthcoming issue as a means of setting the amount of his additional subscription so as to secure just the allotment that he can sell profitably.

The syndicate form of distribution is, then, the most complicated as well as the most frequent. At the present time agreements are flexible and dynamic in the inclusion or exclusion of various clauses. In its application the method is distinctively the outgrowth of American investment methods.

Other Methods of Distribution

The second method of distribution is through a selling group. Selling groups are used on smaller issues in which the risk of unsuccessful distribution is considered slight. This situation exists usually when the bond is especially attractive, when the bond market is strong, or when retailers have insufficient securities to supply the investment demand. Selling groups occasionally are used simply because the gross profit on the issue is insufficient to permit the formation of a syndicate, or in order to increase profit even when the margin would have permitted the formation of a syndicate (which arouses dissatisfaction among the retailers whose profit is correspondingly reduced). In a selling group no liability is assumed by the members. Applications for bonds are placed with the manager and are filled either in the order of receipt or by allotment, members being paid a single commission based on the confirmed allotment. It is possible for retailers in many cases to secure additional bonds above their allotment by immediate telephone communication with the syndicate manager. The chief advantage of a selling group from the originator's view-point is in its economy and simplicity. The disadvantage is that failure

[4] By varying the percentage of participations allowed each "firm," an issuing house may bind itself more or less closely to absolute delivery of bonds. A 100% clause—which occurs fairly frequently—means that subscriptions must coincide exactly with the amount of the issue and that retailers will receive the exact amount of their participation; whereas a 60% or 80% clause—other common figures—gives an opportunity for oversubscription and pro-rata allotment in the 40% or 20% that is unrestricted. In the actual management of an issue, the syndicate manager will often be able to promise delivery on bonds which he does not possess, thus creating a temporary short interest; he meets these promises with bonds repurchased in the process of supporting the preliminary market during the life of the syndicate, as described above. Occasionally, in a very large issue, this short interest may assume considerable proportions.

to distribute the issue completely forces the originator to assume the unallotted bonds. In general form it resembles closely the English methods of distribution.

The third method possible, the use of a wholesale group, is the least frequent. This method is used for the distribution of small issues, particularly serial bonds of which the dealers cannot be expected to accept allotments which do not include bonds of all maturities. A wholesale group is used to greatest advantage in the distribution of securities which sell quickly and for which the market is well defined, since the average allotment is generally larger than in a selling syndicate or a group. The advantage of a wholesale group, in addition to the fact that it permits complete allotments, is its simplicity. It usually is limited to less than 50 firms, so that approximately all the arrangements can be completed by telephone.

The Methods Used by the Company

The equipment trust certificates were obviously adapted to this last method of distribution. The type of security was very popular among investors, and other houses were almost always anxious for an opportunity to sell them. Furthermore, they were issued serially, and it was easy to make a long-time connection with a small group of houses which would carry the distribution through to a close. The company used the method of the wholesale group for this issue; there were 39 members who received a profit of 1½%.

This method did not seem adaptable to the other two issues. The bonds purchased from the Mid-Mountain Power Company, as described above, were subject to an underlying issue and were part of a previous larger block of bonds; the provision requiring earnings to be twice total charges (an expected provision in any case) before a further issue could be made was only applicable to the preceding 12 months. However, investors favored the bonds of utility companies, and the yield was sufficient to attract them—factors which had narrowed the margin of gross profit for the Benton Company.

The bonds of the J. M. Morton Company had several evident points of weakness from the standpoint of the investor. They were a direct first mortgage upon no part of the property of the company; in case of any serious difficulty, they would suffer severely. By using them to replace maturing notes, the company confessed a recent financial weakness which it had been unable to meet out of current earnings or accumulated surplus. The pledge of $25,000,000 of the underlying bonds added little security for a period of real crisis. A consolidation was involved, the success of which could not definitely be estimated.

Because of these weaknesses, the return on the bonds was higher than on the public utility bonds, to include compensation for the greater risk involved. By a process made up not entirely of this theoretical estimation of risk, but also with the tendency of the money market, prices and popularity of other similar recent issues, tax laws, comments from customers—the partners of the company had set the price at which the issue would be sold. But since, from the twofold desire of securing the money for the company upon the best possible terms and of making their own profit a maximum, the price set might be higher than the estimate of many investors, the market for the issue had to be spread over as wide an area as possible in order to reach just that cross-section of cus-

tomers whose judgment (or lack of it) coincided [5] with that of the partners. Such a market could be secured by using a comparatively large number of retail outlets in various cities.

In order to perform its economic function of securing capital for industry at the lowest rate and with the least cost, it is necessary that the issuing house reduce its risk in carrying the issue to the shortest possible time and the amount of capital tied up in the issue to a minimum. Hence the practice of speed and shifting of responsibility seem to be oustanding features of our investment machinery.[6]

But the issuing house must pay for this assumption of risk by other dealers, in the syndicate form. In a selling group, this cost is saved for the originators. It was noted above that retailers dislike the "hogging" of the risk-compensation on a popular issue that is more certain of sale than those in which they are offered syndicate participation. But it would seem to be a legitimate profit for the issuing house and is a real point in favor of the use of the selling-group method.

Another element of major importance in such a decision is the size of the issue, the amounts of capital needed. At one time the house may be able to borrow, get help from associates, or be without an accumulation of other issues that sold poorly; at another time all these conditions may be reversed.

Here, the company would have been just able to divert the necessary capital to carrying the Morton Company bonds under the selling-group arrangement, but to do so would be unwise in view of the possibility of turning over the same capital again in another issue if it were released quickly. The use of the syndicate would, therefore, accomplish this release.

The utility bonds, on the other hand, absorbed only ⅙ the amount of capital and were even more certain of a ready sale from which the profit could largely go to the Benton Company. This element of the use of capital, then, clearly favored the use of a selling group for the utility bonds and of a syndicate for the Morton bonds.

The company followed this procedure in its adoption of methods of distribution. Both steps were clearly wise in view of the factors involved. For the Morton Company bonds a syndicate of 700 members was formed, with a

[5] The theory of investment includes another element in the return on a given bond—the amount by which the investor and the banker err in their summation of the pure interest return and the exact compensation for risk, being for the investor a reward or penalty for his ability or lack of ability in judging the conditions of the particular issue. (see Dewing, HARVARD BUSINESS REVIEW, Vol. 1, p. 451.)

[6] In a country such as ours, where the exploitation of natural resources and the intensive development of industrial and agricultural enterprises have proceeded at a more rapid pace than the increase of surplus savings readily available for investment, there has been the social necessity of drawing into industry savings from all possible sources. Our investment machinery thus has justifiably the appearance of pressure in its workings. It is often compared unfavorably with England, a country which from the very start of the Industrial Revolution was a creditor nation, having an annual volume of surplus savings that surpassed its own needs. Wisdom to direct the course of these savings into wise investment was needed rather than ingenuity and speed in bringing them out of hiding places into industry. Any strict comparison is thus impossible; each system has been especially adapted to the needs of each case.

The English method emphasizes the independence of the investor, placing the broker in a largely advisory capacity—which is a really important function. The former is not solicited by salesmen, and the advice he receives in the financial press is very critical and often unfavorable to new issues. Aside from the activities of the great issuing houses in guaranteeing foreign loans, a large proportion of industrial issues are floated by companies themselves, with no provision for underwriting, with a bank as fiscal agent, and with the brokers acting merely as selling intermediaries for a small commission.

participation profit of 3%, a selling commission to members of 1½%, and additional commission on over-sales of ½%. The selling group for the utility bonds included 100 members, with a commission of 2½%.

SUCCESSFUL DISTRIBUTION THROUGH EXCLUSIVE WHOLESALERS

THE Stewart Companv, until the year 1921, had been a wholesale distributer to the retail drug trade in a middle-western territory. During that year the scope of the business was considerably broadened by a decision of the management to concentrate on the manufacture and importation of a small group of items, which it proposed to distribute nationally to the drug and smallwares trades. It was planned to select a group of leading wholesalers, who would be given exclusive selling privileges within assigned territories.

Difficulties in the Plan

In attempting this method of distribution, the Stewart Company faced certain difficulties. Since it proposed to advertise its products on a national scale, it encountered the problem of attaining, through exclusive wholesalers, the thorough retail distribution needed to support properly a national advertising campaign. When a convenience article is nationally advertised, it is primarily important that it be made available to the consumer at every desirable retail outlet. Yet it is hardly to be expected that any individual wholesaler will number among his regular customers the entire list of desirable retailers within his territory. To the extent that he falls short of this attainment, reliance on him as the sole distributer within the territory results in wasted advertising effort and loss of customers' good-will.

The manufacturer encounters another difficulty in that the wholesaler's salesman is obviously not in a position to devote more than a small proportion of his time or effort to the sale of any one brand. In either the drug or smallwares line the wholesaler's salesman has hundreds of items, each of which must receive a proportionate share of his time; and in many instances he has similar products selling under his own brand, which he feels are entitled to his first consideration. These create a direct conflict of interests, which cannot fail to injure the sale of the nationally advertised article.

By giving the wholesaler the exclusive selling privilege within a territory, the manufacturer removes the stimulus of competition for the potential market. And, by depriving other wholesalers of the right to handle his products, he encourages substitution on their part of other merchandise to compete for the business. He gives them cause to attack his products among the retail trade and to tempt the retailer by offering larger margins on the substitutions.

In the matter of maintenance of reserve stock he places the reliance of all the retailers on the discretion of a single wholesaler. An error in judgment may mean a complete shortage in an entire territory. Or the wholesaler may go to the other extreme and, in an excess of enthusiasm as to the potential sales, overstock the entire territory.

In relying on a single distributer, the manufacturer further concentrates his

risk. Financial embarrassment of the wholesaler or a decision on his part to sever the relationship would leave the manufacturer in a difficult position. The wholesaler, being the point of contact with the trade, is in a position to influence retailers away from the use of the manufacturer's products. Rebuilding the trade lost in this way, whether by a new wholesaler or by direct selling, is a slow and costly process. By the same token, the wholesaler is placing his risk in a single manufacturer, in that he may lose the right to distribute those products at any time and will then be unable to furnish his customers with the goods they desire.

Reliance on wholesale distributers removes the manufacturer by one step from contact with the trade with its complaints and requirements. Naturally, the same control cannot be exercised over a group of wholesalers' salesmen that would be possible over one's own. Enthusiasm is likely to be weakened as it passes down the line. It is more difficult to obtain efficient merchandising of the manufacturer's products. Wholesale salesmen, requiring a certain versatility to sell such a wide variety of products, cannot be expected to develop the specialized selling ability which would be possible in the case of manufacturers' salesmen.

There is the added difficulty of determining an equitable division of overlapping territories. This offers a possible source of friction which renders efficient cooperation exceedingly difficult.

For the manufacturer who can overcome or minimize these disadvantages, there are certain real advantages of distribution through selected wholesalers. The interested support and intelligent cooperation of a wholesaler, who knows that he is to be protected within a territory, should mean an intensive development of the potential market. The exclusive selling rights of a well-known brand of merchandise can serve the wholesaler as a means of entrée to new accounts, which he had formerly been unable to acquire.

A better relationship is possible in that the interests of the manufacturer and wholesaler become more in common. The obvious dependence of each on the other makes for greater stability in this relationship. The manufacturer is thus enabled to exert a better control over the distribution of stock. He can give the retailer better service by assuring him of a reserve stock at all times within his own territory.

This type of distribution offers an opportunity for lowered selling expense. It is obvious that a wholesaler, with his variety of items, can sell a larger bill to each retailer and, therefore, reduce the unit selling expense. Shipping troubles should be reduced because of the reduced number of shipments, and shipping expense should be lowered because of the increased size of the average shipment. Credit risks and loss from bad debts can be minimized by the reduction in the number of accounts and the careful selection of the most reliable wholesalers. Profit margins can be better protected by the elimination of price-cutting among wholesalers—a condition which should stabilize prices and protect the interests of all concerned.

Overcoming Disadvantages in Practice

The theory is frequently expressed that the disadvantages of distributing a nationally advertised convenience item through selected wholesalers are so great as to render it inadvisable. In the light of this theory, the experience of the Stewart Company offers ground

for controversy. In the first place, it was decided to select the very best wholesaler in each territory. As an inducement, an intensive advertising campaign, concentrated on one of the products, was launched in each territory. The desired wholesalers were shown that it would be distinctly to their advantage to realize on the results of the advertising, for which the manufacturer was paying.

As a result of the advertising campaign and the inducement of exclusive selling privileges, a group of exceptionally high-grade wholesalers was assembled. Each was assigned an exclusive territory with the single proviso that the manufacturer reserve the right to deal direct with all chain-store organizations whose sales exceeded a million dollars a year.

After a year's association with the company's line, the wholesalers were asked to take a definite annual quota of the Stewart products. This quota was to be based on the percentage of native whites living in each territory. For example, for every 1,000,000 native whites within a designated territory, a quota of 200 gross of hair nets was assigned to the wholesaler responsible for that territory. In the case of Massachusetts, which has 2,725,000 native whites, the total quota for the state was 545 gross.

This quota basis was employed for a year, and at the end of that time it was thought desirable to revise the method of determining the quota. It was felt that mere numbers of people did not furnish a fair index—that the 2,000,000 native whites in Massachusetts had a much higher purchasing power than the same number in Alabama. An index of purchasing power was constructed and was used as an adjustment factor in resetting the quotas.

This index was a composite of four factors:

1. The percentage of the combined circulation of the Curtis publications in each district to their total circulation in the country;
2. The percentage of the total income tax returns of the United States from each district;
3. The percentage of Stewart Company business done in the district;
4. The percentage of the total business of six manufacturing firms[1] done in the district.

The average of these four percentages, as determined for each district, was divided by the percentage of the country's native whites in that district. The result of this ratio was the adjustment factor by which the old quota was multiplied to obtain the new quota. For example, in the case of Massachusetts, which was found on the old basis to have a quota of 545 gross of hair nets, the following figures were compiled:

Massachusetts

Sales of the six companies in 1923	3.96%
Stewart Company sales in 1923	2.88
Combined Curtis circulation in district	4.64
Income tax returns	5.84
Average or per cent of buying power	4.28%
Native whites	3.36

Buying Power Ratio: $\frac{4.28}{3.36} = 1.27$

	Old Quota	New Quota
Native whites	2,725,000	2,725,000
Buying-power index	100	127
Quota (200 gross per million native whites)	545	692

[1] The six companies are: Wm. Wrigley Jr. Company, Colgate and Company, Eastman Kodak Company, Eversharp Pencil Company, Fuller Brush Company, "Stewart Company."

The results obtained in 1922, the first year under the quota plan of operation, were considerably less than 100% accomplishment. The management did not, however, lower its quotas for 1923. The second year's results showed distinct improvement; many of the distributers exceeded their quotas by a comfortable margin and the average was materially higher. Until January, 1924, the accomplishment had been measured in terms of "volume of goods purchased" by the distributer. But in that month the measurement was changed to the "volume of sales to the retail trade."

The Stewart Company has found that, although at first a number of distributers refused to sell under the quota plan, all have since been converted and at present the entire group is cooperating in its operation. It has been found, further, that despite the predictions that it would be impossible to obtain adequate retail distribution through selected wholesalers, it is now estimated that among the drug and dry-goods retailers, 85% distribution has been achieved on one item, 80% on another, and 75% on the third of its three most important items.[2]

[2] This calculation is based on the total number of retail outlets of each type rated over $1,000.

As a means of maintaining the proper relationship with its distributers, the Stewart Company has inaugurated an annual convention of wholesalers' executives. The methods of determining the quotas, the presentation of statistics of past performances, the awarding of prizes for best performances, and the submitting of new merchandising ideas by the sales promotion department of the manufacturer, are all included in the schedule of the convention. In addition to the executives' convention, three regional conventions of their salesmen are assembled. The wholesalers bear the expense of sending their men, and the manufacturer undertakes to instruct them in concrete merchandising methods in the sale of Stewart products.

The results obtained up to the present time have led the Stewart Company to the conclusion that distribution through exclusive wholesalers is possible and can be made profitable if planned intelligently. It would appear from their experience that the disadvantages of this method can, by the exercise of great care in selection and equal skill in the maintenance of the relationship, be so minimized as to make this method of distribution both pleasant and profitable.

SPECIALIZATION BY A SMALL INVESTMENT BANKING HOUSE

WARD and McAlpin is a small investment banking firm located in a fair-sized city, with capital of about $400,000. It does both an originating and a retailing business in bonds; about 75% of the bonds which it originates are sold through its own salesmen. Up to several years ago, street-railway bonds had been predominant among the issues of the firm, although there had been no specialization. The partners became convinced that a decline in the investment value of street-railway bonds was imminent and decided to discontinue buying them. Accordingly, street-railway bonds already sold were exchanged, in large part, for other bonds and disposed of as rapidly as possible.

It then became necessary to decide what type or types of bond should be originated to form the major part of the company's underwriting. Since this was a firm selling a very large part of its own underwritings, the decision would have a very vital effect upon the future development and stability of the business. The partners were convinced that to establish the firm as specialized bankers in the bonds of electric light, power, and gas[1] companies would provide the basis of strength for future growth. But there was a large group among the firm's customers with whom safety was a prime requisite. State and municipal bonds would furnish this element of safety; although the margin of profit was small, the origination of these bonds rested upon a mechanical basis and would leave the partners free to develop the power bonds as the main interest of the firm. To use both these types would be essentially specialization, with the second type—namely, state and municipal issues—utilized merely to satisfy certain customers and to allow a constantly efficient use of capital. Of course, the firm would continue to take small participations in selling syndicates arranged by certain large originating firms in order to increase the assortment of bonds required to meet special needs of customers.

Analysis of Specialization

It was believed that the firm which concentrated in electric light and power bonds and acquired the prestige that comes to the specialist in any activity would have the best opportunity of profit from this demand for capital. Through its intimate knowledge of the industry, such a firm could ascertain which of the existing companies needed more money for expansion, which consolidations were possible and advisable, and where new companies could be started and operated successfully. Light, power, and gas companies in need of capital, and promoters and engineers considering the construction of a new plant, tend to come to a firm of specialists because they can secure capital on the least burdensome terms and can avoid the mistakes which less experienced firms may make. The firm's customers would become used to buying light and power bonds, so that the bonds would be sold largely for permanent investment and would not be offered in the market in such quantities as to make subsequent financing difficult.

Specialists are better equipped to protect their customers than the firm which brings out issues of various types. A small firm is able to keep in touch not only with its own companies, but also with fundamental conditions in the industry in general. It cannot do this if it is selling railway, public utility, and industrial bonds. A firm with many partners and an elaborate statistical organization might find this possible, but it is unprofitable for firms the size of Ward and McAlpin. Not only can the specialist firm protect its customers more adequately after the securities are sold, but for the same reasons it can buy more intelligently and thereby reduce its own risk.

The specialist firm, however, operates under disadvantages. Opportunities to purchase desirable issues come less frequently because of the restricted scope which is allowed for its financing. This necessitates less exacting requirements for the bonds to be purchased if capital is to be fully employed. Unfavorable developments in the particular industry in which the firm specializes af-

[1] Gas bonds were included because of close association with light and power companies.

fect the value of all the securities it has sponsored in the past. Under these conditions, the maintenance of a satisfactory market for its bonds (a prime requisite for lasting success) may at times become impossible. Defaults in interest payment on issues which the firm had originated are likely to occur in the same years. Even one such default is troublesome, since it necessitates the formation of bondholders' committees, with consequent legal and auditing expenses, for the protection of its customers. Firms which are interested in several types of investment have the advantage of diversification of risks, and their difficulties usually do not come together. A diversified list of investments is essential to the development of a permanent list of customers, since the same type of security does not appeal to all classes of investors nor to the same investor at all times. A firm which specializes in electric light, power, and gas bonds is forced to provide its customers with other types of securities through participation in selling syndicates or by trading with firms which possess the type of bond desired. In issues which the firm acquires through such participation in selling syndicates, it gains only the selling profit, whereas several points additional profit may be made if it originates the bonds. (The *trading* profit amounts to from ¼ to ⅛%.)

The sponsors of the specialization suggestions in this company, however, maintained that the objections to the plan did not apply to a small firm retaining most of the bonds purchased. Since Ward and McAlpin retails about 75% of the bonds it originates, it is not possible for its capital to be turned so rapidly as that of a firm which retails only a few of its purchases. Small firms do not as a rule borrow on unsecured notes (except in easy money markets, and then in small quantities) but on collateral only. Thus the company did not increase the volume of its capital to any great extent by borrowing. About 75% of the capital which Ward and McAlpin expends in the purchase of issues is not available again until the bonds are sold to the public. It, therefore, cannot be used as soon to purchase another issue as when the entire issue of bonds is sold immediately to a selling syndicate. Although Ward and McAlpin's capital can be turned only once while the originating firm is turning its capital two or three times, the retailing profit is usually 5 points, compared with 2 points realized by the wholesalers. The percentage of profit, therefore, is not greatly different. Since the retailing firm originates less frequently than wholesalers of equal capital, it can employ its funds to the full extent even though it confines its purchases to one type of bond.

The old adage that every generalization has exceptions applies well to conclusions drawn concerning particular securities. Such general conclusions, however, had to be drawn in order to make a decision in this case. The decision involved consideration of several classes of securities: United States Government, foreign government, railroad, real estate mortgage, and state and municipal bonds.

Industrial securities, bonds of manufacturing and trading enterprises, would seem to be an obvious field for specialization. There are many small-sized firms which from time to time desire to finance really sound expansion through a bond issue; many investment banking houses have been successful in flotations of this character. But the amount of investigation required is usually larger, requisites for success vary widely between different firms, and the exigencies

of competition affect the stability of both earnings and security. A small company is often more unable than a large one to withstand minor changes in technical method or the depression phases of the business cycle by the very fact that its reserves are less. Such small firms would have to be the field of Ward and McAlpin, with its limited capital. As compared with power securities of publicly regulated monopolistic companies, small industrial companies operate under the handicaps of nation-wide competition, the greater importance of managerial policies, and the wide fluctuation of earnings (even in the soundest companies).

United States Government bonds could be adopted as a field for specialization, but the profit on these bonds is small and unless great volume can be handled, they are not suitable for a house such as Ward and McAlpin. Moreover these issues are originated in such large amounts that the capital of the firm would be insufficient to handle them.

The return on foreign government bonds is adequate, but the size of these issues also is generally so large that Ward and McAlpin would be unable to originate them. They require more selling effort, since this country has only recently become a large market for foreign issues. Canadian provincial and municipal bonds offer a possible field, subject to two serious objections: (1) there has been recently a certain amount of overexpansion in some parts of Canada; and (2) Canadian bankers and investors seem willing, a good deal of the time, to pay higher prices for these securities than American bankers and investors are willing, or probably able, to pay.

Original issues of steam railroad bonds are handled almost entirely by two or three large wholesale bankers. Such firms act as financial sponsors for the leading railroad systems and their relations are usually continuous and confidential.

Some advantages are to be gained by specializing in the original purchase and sale of real estate mortgage bonds. Many of these issues are of reasonable size, have a good degree of safety if properly chosen, and are relatively easy to obtain. Freedom from state and local taxes in certain states recommends them to investors there located. One investment banking house deals exclusively in real estate mortgages and advertises that it has never lost a dollar of interest or principal for its customers. The security of these bonds is local: it is affected by constant changes in neighborhood values, in the market value of the site, the depreciation of the building, and its use. Hence, these bonds do not have wide popularity and consequently have a limited degree of marketability which results in a wide spread between bid and asked prices. This class of bonds was believed by the partners to be ill-adapted to their clientele.

Value of State and Municipal Issues

State and municipal bonds have several distinct characteristics which recommended them to this firm at the time the decision was made. It was known, of course, that their reputation for safety would be important to a large group of the small customers of the company. It would be easier to sell them to investors merely because of familiarity. As a class they have become standardized and their freedom from federal income taxes recommends them particularly to large investors.

The losses incurred through default of state and municipal bonds nearly all

occurred in the earlier history of the country. In late years, their record over comparable periods of time has been better than that of power bonds, measuring this record by the test of final loss to investors. In case of the default of first mortgage bonds of electric light, power, and gas companies, receivership followed by reorganization results, with or without foreclosure. New securities are often exchanged for the original ones, with possibly an assessment for new cash. State and municipal bonds are public securities based on the full faith and credit of the people and are payable out of taxes from all assessable property within the community. In case of default on city bonds, suit to establish a claim and to ask for a writ of mandamus ordering a levy of taxes to pay the judgment is the usual remedy (this action varies among the states). In case of a default of state bonds holders cannot, of course, bring suit against the defaulting state,[2] but their recent reputation for safety is even greater than that of municipals.

It was noted above that Ward and McAlpin used collateral loans almost entirely in carrying their securities prior to final sale. The probable margin required in such loans for power bonds would be 20%, on other classes of securities greater, while for state and municipal bonds it ranges between 10 and 15%. Obviously the firm could carry more state and municipals with a given amount of capital than any other class of bonds.

The seemingly large disparity between the profit realized in power securities and that in state and municipal bonds is reduced by the fact that the unit of sales could be made larger and sales resistance lessened for the latter. Moreover, buying expenses for state and municipal bonds are small; owing to the standardization of these securities, expenses are limited to a share of office overhead, cost of legal opinion, and interest on money deposited with each bid (usually 2% of the value of the issue bid for). For other classes of securities there are the heavier expenses of expert engineering examinations, legal corporate examinations, and statistical information.

Besides these factors of selling resistance and expense, there is a third important element which affects the turnover of the firm (and hence its profit). This is the ease with which issues of each type are secured. In state and municipal bonds, sales are made by competitive bids. The process has become standardized, so that a bid can be made with remarkable accuracy. But for light and power bonds, a large degree of skill and managerial ability is involved in obtaining satisfactory issues, in building up permanent relations with many scattered companies, and in maintaining relations with promoters and engineers.[3] The fact that a few large holding companies control many small units over certain areas of the country increases the difficulty. As years go by, constant alertness and careful choice of securities will produce the desired permanence of relationship, but for some time it would be difficult to insure even a fairly steady supply of such issues. The use of state and municipal issues supplements the weakness of power bonds in this respect.

Conclusion

Specialization in one type of bond

[2] The Eleventh Amendment to the Constitution forbids the bringing of a suit against a sovereign state without its own consent, except by another state.

[3] In Massachusetts, and one or two other states, utility bonds are sold through competitive bids.

was particularly suitable to this small firm, which retailed a large percentage of the bonds which it originated and which desired to build up a permanent clientele by means of a high reputation in a particular line. The double basis upon which the company decided to rest its future business was in reality specialization upon light and power bonds. State and municipal issues involved less expense in origination, were subject to less sales resistance from customers, and were easier to obtain in a steady volume. Thus, while the energies of the partners could be directed toward building a sound foundation for reputation in the field chosen, the second type of issue used would supplement effectively this work, especially in the earlier years.

REVIEWS OF BUSINESS LITERATURE

Gerstenberg, C. W. FINANCIAL ORGANIZATION AND MANAGEMENT. *New York: Prentice-Hall, Inc., 1924. 721 pp. $5.*

Industrial society of the present time has furnished the groundwork and material for the great collection of principles and theories surrounding corporate organization and finance—a study that "vigorously pursued, can be trusted as a modern substitute for some of the college mathematics, logic, and philosophy of a generation ago."

Mr. Gerstenberg sets this forth as a possible use and purpose of his book, *Financial Organization and Management,* which embodies his own course in corporation finance as he has given it at New York University in recent years. The adoption of such a purpose would lay upon the content of the book a rather heavy burden, and would set up a standard of judgment that is rather more intangible than can well be applied to the majority of business books. A study so essentially practical, dynamic, immediate in its relation to our lives, is probably far better fitted to its present place as a specialized subject in specialized schools, whose students seek a practical working knowledge of our economic society. In this light a text on the subject treated in this book can most wisely be judged.

By this test the book is really valuable and compares favorably with the work of the few other men in the country who may be regarded as authorities in this subject. Moreover, there is a conscious concession in the mode of treatment to the needs of the business man in the great quantity of specific references throughout the book. Many of the graphic illustrations are included for the same reason. The twofold purpose of providing a text for students and reference material for business men is well accomplished, a purpose that is really a necessity for success in present-day business books. The structure of the book follows in general the chronological order of typical phases in a company's history—promotion, forms and organization, the acquiring of capital, control of income, expansion, and failure. The chapter on the form of organization known as the Massachusetts Trust is excellent, showing its anomalous place under the laws of most states, and its particular adaptation to certain enterprises. A chapter is included which sums up the relative positions of the various forms of organization with special emphasis on the influence of tax laws in each case.

The treatment of mortgages begins with an excellent analysis of the nature of the specific clauses in the ordinary mortgage and goes through the many variations in priority and security in use today and the restrictions laid upon companies in the contraction of debt; conversion, refunding, and redemption of bonds each have separate chapters. The whole discussion here is clear and comprehensive—easily the best part of the book.

The discussion of surplus and dividend policies and intercorporate control through leases are two later chapters that are well done. The author wisely reduces the amount of space devoted to the anti-trust laws and their interpretation, as compared to older texts on this subject.

Without additional discussion and elaboration from other sources, certain

portions of the book would be of dubious value. There occasionally is a lack of proportion in the treatment of more complicated questions as compared with elementary matters. Constant use of subheadings probably contributes to this tendency, making all paragraphs appear of equal importance and not allowing expansion in treatment where it is needed. Failure and reorganization—the last general division of the subject—is one place where this is especially noticeable. Not only is this subject most interesting, but it is the most complicated and capable of the most variations in actual practice of all the phases of corporate history, and, therefore, the most difficult. In a well-balanced general treatment, these chapters deserve far more space, especially in the light of the additions to our experience and knowledge in 1920 and 1921.

Rietz, H. L., editor; Carver, H. C.; Crathorne, A. R.; Crum, W. L.; Glover, J. W.; Huntington, E. V.; Kelley, T. L.; Persons, W. M., and Young, A. A. HANDBOOK OF MATHEMATICAL STATISTICS. *Boston: Houghton Mifflin Co., 1924. 221 pp. $4.*

The 12 compactly written chapters of this reference manual will be recognized as authoritative, and the practicing statistician in any of the major fields of inquiry will find it a useful addition to his working tools. Its very virtues of succinctness and compactness, however, make it unsuitable as an introductory text for the beginner; on the other hand also, it does not attempt to cover every question of broad statistical procedure in any given field. The authors have avowedly chosen rather to confine their discussions to the second of "the three mainstays in any statistical investigation," namely, the mathematical analysis of data already collected. They have purposely omitted everything except incidental or illustrative references relating to two equally important stages: the collection of the data which are to be analyzed, and the interpretation of the statistical results obtained by means of analysis; this is done in both cases on the ground that these steps raise problems which differ so markedly in different fields, that is, in economics and education, as to make impossible a generalized discussion, such as is actually undertaken for the specific second stage.

The nine authors are indeed well qualified for such a discussion, having their major statistical interests in such diverse fields of work as economics, education, mathematics, engineering, and insurance. The title page lists them as members of the committee on the mathematical analysis of statistics of the National Research Council, and it is stated that all royalties from the book are to go to the Council for further work in the field of mathematical statistics. It is also worthy of note—though nowhere in the book is mention made of the fact—that practically all the authors are either fellows or members of the American Statistical Association, and readers of the association's *Journal* will recognize among them distinguished contributors to its columns. In fact, the present volume is doubtless partially due to recommendations submitted to the directors of the association at a meeting some two years ago. At any rate, the following excerpt from a summary of the aims then outlined should afford a good criterion for a work of this character:[1]

> The committee's first effort was to determine the specific form that final action should take to be of real service to the statistical profession. The immediate need of teachers,

[1] *Journal of the American Statistical Association*, vol. xviii, p. 522.

students, and practicing statisticians appeared to be for an authoritative and rather detailed outline of principles and practice in the elementary and intermediate rather than the advanced ranges of statistical science.

With the problem thus newly defined, the committee then undertook to survey in a general way the existing statistical treatises and text-books in English. This survey indicated the existence of many excellent elementary and advanced texts, and of many valuable treatises on special statistical applications. There appeared, however, to be a distinct lack of what might be called intermediate texts, representing the dividing line between the skill of the statistical specialist and that knowledge of statistical principles and practice which should be the common property of all well-trained statisticians.

A further study of the question indicated rather clearly that this series could not be expected to replace text-books prepared for purposes of instruction in colleges and universities, nor could it be expected to replace advanced treatises on statistical methods and statistical applications. It seemed clear that the proposed texts should be designed primarily for reference purposes, and that it would be particularly necessary to have them prepared under such supervision as would make them represent in the subject-matter as a whole, and in the relative space assigned to the various elements of illustrative subject-matter, an authoritative consensus of up-to-date statistical opinion and experience.

The Handbook appears to live up to the requirements set forth above with a very considerable degree of success. Some may contend that for an "intermediate" text it has taken too advanced knowledge of the subject for granted on the part of the reader, as in the technical chapter on "Frequency Curves;" and others will say that, on the contrary, it offers little to the advanced technical specialist which he does not already have available in more complete form. But it seems clear that the authors have done a pronounced service in putting together in convenient form an authoritative restatement of the best modern practice and sound theory in the mathematical analysis of statistics.

Probably of particular interest to business statisticians will be the final chapters of the book: the Correlation of Time Series, which expands and illustrates the elimination of seasonal variation and secular trend for economic series; periodogram analysis, using commercial paper rates of 1899-1914 as an illustration; and index numbers, in which Professor Allyn A. Young gives a well-considered discussion of a broad subject, condensed into some 14 pages. Other chapters which involve more strictly mathematical aspects of analysis cover such subjects as frequency distribution; interpolation, summation, graduation; random sampling; Bernouilli, Poisson, and Lexis distributions; and simple, partial, and multiple correlation. Two parts of the book adding greatly to its reference value are a chapter on "Mathematical Memoranda," giving practical suggestions on labor-saving methods of computation and checking and a collection of standard mathematical formulas, and an extended list of selected bibliographical references which will enable a reader to pursue in further detail any of the subjects outlined.

BOOK NOTICES

Beckman, Theodore N. CREDITS AND COLLECTIONS IN THEORY AND PRACTICE. *New York: McGraw-Hill Book Co., Inc., 1924. 466 pp. $4.*

The extensive use of credit is one of the most striking characteristics of our modern commercial practice. For that reason a comprehensive study of all prevalent types of credit extension such as this should be of interest to a large body of business men and bankers.

In Part I the various forms and common

practices are explained. Part II describes the different sources of credit information, such as the mercantile agencies and credit exchange bodies. Modes of evaluation of information obtained directly are also explained. Descriptions of the organization and management of mercantile, bank, and retail credit departments occupy the next three chapters. The final section deals with the general subject of collections, in both its practical and legal phases. The various modes of procedure with embarrassed accounts are also described. A supplement shows the common terms of sale for different commodities.

The treatment throughout is simple and clear. Factors are carefully weighed and many valuable suggestions are made. Although written primarily for the credit man, the book merits the attention of business executives and bankers.

Bliss, James H. FINANCIAL AND OPERATING RATIOS IN MANAGEMENT. *New York: The Ronald Press Company, 1923. 396 pp. $6.*

In this volume Mr. Bliss presents a discussion and evaluation of each of the more common forms of ratios necessary for efficient management, together with illustrative figures for different industries and types of business. The first section is the text commenting on the purposes and modes of obtaining the various ratios. These are classified as measures of earnings, measures of costs and expenses, turnovers, financial relationships, and measures of efficiency.

An exhaustive series of statistics supplements the briefer tables in the first part. From the published reports of several hundred companies the various ratios are given annually, not only for the different lines of manufacturing enterprises, but also for several individual concerns in each line. These figures should prove valuable to any one interested in the operating results of the larger corporations of the country and to those wishing to compare standards in different types of industry.

Bloomfield, Daniel. THE MODERN EXECUTIVE. *New York: H. W. Wilson Company, 1924. 263 pp. $2.25.*

Mr. Bloomfield has brought together in this volume a series of articles from various magazines and journals, dealing with the problem of executive management. The articles are grouped under the following headings: Leadership and the Modern Executive; Place of the Executive in Management; What Is Executive Ability; Developing Executive Ability; Foreman as an Executive; and Work of the Executive. As is common in such compilations, there is much repetition and some contradiction, giving the reader a confused impression. Some of the individual articles are, however, clear and concise. An extensive bibliography of pertinent literature appearing in the various publications of this country in the past 15 years should be of aid to those desiring to make a more complete study of the subject.

Cowdrick, Edward S. MANPOWER IN INDUSTRY. *New York: Henry Holt & Company, 1924. 388 pp. $3.25.*

Written from a strictly engineering point of view toward labor and personnel problems, this volume of the "American Business Series" is a straightforward presentation of the very general field indicated by the title. There is a cursory survey of labor conditions and the different layers of races that have composed our wage-earning classes at different periods. It is of little value. Each of the later chapters, composing the bulk of the book, is devoted to a single problem of labor management. The discussion of these problems will enable the executive to understand their relationship to the whole problem and to understand their main features, without attempting to absorb the mass of detailed, specialized information that has grown up around this general question in recent years.

Ely, Richard T., and Morehouse, Edward W. ELEMENTS OF LAND ECONOMICS. Vol. II in "Standard Course in Real Estate." *New York: Macmillan Company, 1924. 363 pp. $3.50.*

This volume is designed as an introduction to an entire projected series on land economics. It accomplishes a double purpose, in that it deals in a scientific but elementary way with land as an economic factor and also furnishes a foundation of economic principles for the treatment of land as a commodity. Land problems are discussed under such heads as the present and future utilization of urban and agricultural land, forest and mineral land, property rights in water, ownership of land, land credit and land

values, policies of land settlement and development, and land taxation.

Fordham, Thomas B., and Tingley, Edward H. ORGANIZATION AND BUDGETARY CONTROL IN MANUFACTURING. *New York: The Ronald Press Company, 1924. 233 pp. $3.50.*

Current literature relating to the adoption of budgets as a means of control of business activity stresses the attainment of control through the utilization of definite methods. The authors of *Organization and Budgetary Control in Manufacturing* avoid discussion of the relative merits of different types of organization and make no recommendations as to the specific methods whereby the desired control can be attained. Their main theme is to discuss the theory of organization and its relationship to budgetary control; and they desire to present to the executive the principles which will enable him to choose from among the numerous control devices offered to him those through which the most effective control can be realized.

Haney, Lewis H. THE BUSINESS OF RAILWAY TRANSPORTATION. *New York: The Ronald Press Company, 1924. 613 pp. $4.*

The primary purpose of the author is to bring out the elementary problems of traffic management. The treatment is from the point of view of the consumer of railway service and the elementary student of transportation. Following a survey of the position of the railroads as a business in this country, and their geographical layout, are sections devoted to rates and rate structures and special traffic problems. The vital aspects of government control are given general discussion in a final section.

Jensen, Jens P. PROBLEMS OF PUBLIC FINANCE. *New York: Thomas Y. Crowell Co., 1924. 606 pp. $3.*

As the author states, this book is intended primarily for use in elementary courses in public finance. The clearness and thoroughness of the analysis and the manner of presentation render it fairly well adapted to this purpose. It is also instructive and up-to-date for any one desiring to know the theory and the practice of handling public revenues and expenditures.

The book is divided into four parts, following an introductory chapter which gives a background for the discussion. Part I deals with public expenditures, and Part II with public revenue, a subject which is recognized by the author to be a most important phase of the problem. Revenues are first classified and then in turn discussed. The outstanding feature is the detailed discussion of every form of taxation. Nearly 300 pages are deservedly given to this important subject. Part III deals with public credit, and Part IV with fiscal administration. A chapter is given to the fiscal administration of the United Kingdom, but throughout the greater part of the book the discussion is based chiefly on the United States.

Jones, Eliot. PRINCIPLES OF RAILWAY TRANSPORTATION. *New York: Macmillan Company, 1924. 607 pp. $3.*

Although considerably more complicated than other standard text-books on transportation, this work will undoubtedly find a definite place in the text-book field. Extended treatment of many subjects of direct interest to business, such as rate-making, valuation, and combination, make it valuable for general reference reading. The conventional subdivisions of the subject are followed, although some special problems of the present time receive an unusual amount of space.

Kilduff, Frederic W. AUDITING AND ACCOUNTING HANDBOOK. *New York: McGraw-Hill Book Co., Inc., 1924. 813 pp. $6.*

To a growing number of handbooks published for the use of accountants is added Mr. Kilduff's *Auditing and Accounting Handbook*. Throughout the sections of this book, theoretical discussions of accounting procedure are practically absent. Questions, outlines of procedure, forms of records and schedules, and more than 300 pages of mathematical tables of use to the accountant take their place. One section is devoted to each of the subjects of auditing and plant survey. The outlines of procedure for these two phases of the duties of the accountant are extensive and should prove helpful to any one having such tasks to perform. One section devoted to financial statements and forms presents numerous types and arrangements of statements and points out the characteristic feature of each. In the two sections dealing with inventory and property classification, the author has presented an exhaustive list of

stores materials encountered in manufacturing concerns and a comprehensive alphabetical index of physical property items with their annual depreciation rates.

Mr. Kilduff's handbook is not intended to be a treatise on the theories of accounting, but to serve as a convenient source of much important information needed continually by the accountant and auditor.

Maclean, Joseph B. LIFE INSURANCE. *New York: McGraw-Hill Book Co., Inc., 1924. 423 pp. $3.50.*

As the first volume in a projected series on insurance, under the direction of Professor Blanchard of Columbia University, the publishers present here a general informative volume on the whole subject by an assistant actuary of the Mutual Life Insurance Company.

The presentation presupposes no knowledge of insurance on the part of the reader. Considerable technical material is relegated to an appendix, and there is constant recognition of controversial views. The justification for present practices, as well as their evolution, is well brought out. In addition to the theoretical principles, there are sections on the special modern developments of group and industrial insurance, the internal management of companies, the effect of taxation, and an historical survey of the growth of insurance in this country. While not absolutely complete, the book is an excellent general survey for the reader with little preliminary knowledge.

Mellon, Andrew W. TAXATION: THE PEOPLE'S BUSINESS. *New York: Macmillan Company, 1924. 227 pp. $1.25.*

Fundamental principles of taxation, Treasury policies, revising the taxes, surtaxes, taxing energy and initiative, estate taxes, benefits of tax reduction, and tax-exempt securities, are the topics of this non-technical discussion. Mr. Mellon gives a simple and concise statement of the facts as to the Treasury's program, an interpretation of the ideas underlying its policy, and the bearing of the whole taxation controversy on the well-being and prosperity of the country. The book is essentially an argument for the so-called "Mellon plan" of taxation. Appended to the main discussion are various tables and documents, which are further arguments for the taxation plan sponsored by Mr. Mellon and the Treasury experts.

Nourse, Edwin G. AMERICAN AGRICULTURE AND THE EUROPEAN MARKET. *New York: McGraw-Hill Book Co., Inc., 1924. 333 pp. $2.50.*

The publications of the Institute of Economics have been uniformly excellent in their clear, straightforward presentation of a specifically defined subject. In examining the three sharply separated periods in the history of our agricultural exportation—the period up to 1900, from 1900 to 1913, and the World War—and from this background proceeding to definite conclusions and forecasts, Mr. Nourse has presented facts and theories in readily understandable form. The general theory of international trade as it affects our agriculture, especially at the present time, is set forth with welcome simplicity. Although it is pointed out that there is little real hope for a recovery in volume of our agricultural exports, Mr. Nourse refrains from any unnecessary discussion of half-way remedies. Appendices separate from the text elaborate the conditions surrounding the changes in export and import conditions and the special question of Germany's foreign assets (all of the other European countries are examined with less detail in the text in regard to their purchasing power). The text itself is brief in comparison with other similar books.

Opdycke, John B. BUSINESS LETTER PRACTICE. *New York: Isaac Pitman & Sons, 1923. 582 pp. $2.50.*

This work is equally valuable for the teacher and student of stenography, for the teacher and student of business, and for the manager of the business office or the correspondence supervisor. It is essentially a guidebook along the lines laid down by the Better Letter Movement. The points made are well explained by the frequent interpolation of correct and incorrect examples of actual letters. Many letters, which have been actually used in business, are presented for study and practice dictation. Considerable space is also devoted to the exposition of the basic principles of English underlying all letter-writing. The Appendix contains a lexicon of special business words, a list of business abbreviations, and a rather full index which makes the book useful for reference.

Criticism of modern business-letter practice has been overdone in recent years. However, this type of book is really valuable in pointing out essential principles and serving to direct attention toward better practice in specific instances.

Smith, Edgar Lawrence. COMMON STOCKS AS LONG TERM INVESTMENTS. *New York: Wood, Low & Company. 1924. 72 pp.*

An orthodox opinion is flatly challenged in this interesting monograph. The author gives detailed support for his thesis that the non-institutional investor who has bought common stocks of American corporations and held them through good times and bad alike has not only had a better income, but has actually better protected his principal than the would-be "conservative" investor who confined his purchases to a like amount of high-grade bonds. Detailed tables are marshaled, giving the results of a series of comparative tests at intervals from 1866 to date. In each test, one investment of $10,000 is assumed to have been made in a list of high-grade bonds; and another of a like amount is assumed to have been simultaneously made in a diversified list of American common stocks, which purport to have been chosen as nearly at random as practicable. To eliminate entirely such elements (often considered necessary for the buyer of common stocks) as "watching the market" and "playing the business cycle," it is further assumed in each test that the two lists once selected are kept virtually unchanged for approximately two decades; and the comparative results are tabulated in detail. It is to be noted that the study covers the long period of falling commodity prices after the Civil War, which should favor bonds, as well as the more recent period of rising commodity prices since the early nineties.

In accounting for the markedly superior results which the author finds appearing in these tests in favor of the common stocks studied, "both in purchasing power and in dollars," he stresses two main causes: first, the defenselessness of bonds payable in a fixed sum of dollars against the "depreciating dollar"; and second, the element of growth, inherently lacking in bonds, by virtue of which those groups of representative common stocks of American corporations have apparently been enabled in any decade since the Civil War more than to offset losses arising from individual companies in the group. Thus, while a single bond is admittedly more likely to prove safe than a single common stock, the author contends that no truly conservative investor can afford to omit from his safe-deposit box a sufficiently large list of diversified common stocks to protect the principal of his investment against shrinkage.

Walter, Hubert C. MODERN FOREIGN EXCHANGE. *New York: Robert M. McBride & Company, 1924. 194 pp. $2. (Printed in Great Britain.)*

The author was formerly Lecturer in Foreign Exchange at the Institute of Bankers and the Municipal School of Commerce of Manchester, England. The book is based on a series of lectures delivered there during the years 1919-1922. The book, like the lectures, is designed to minimize technicalities and is written in such a way as to make it comprehensible to the business man not highly trained in economic theory, as well as to the student. The material for both lectures and book is the result of the author's experience in foreign-exchange transactions for a mercantile company and a joint-stock bank; it is treated in the light of English practice.

The author stresses the fact that the "normal" exchanges of today are quite different from those of pre-war times, and probably will continue so, with the result that phases of theory hitherto little discussed must be carefully developed. In this connection such subjects as inflation, purchasing power parity, the course of the mark, the possibilities of stabilizing the exchanges, and of a return to the gold standard are discussed rather fully. Throughout the book the author has endeavored to explain, first, how a certain operation is carried on; and, secondly, why it is done in that way and what the results are. A short bibliography of books on foreign exchange is appended.

Whitbeck, R. H., and Finch, V. C. ECONOMIC GEOGRAPHY. *New York: McGraw-Hill Book Co., Inc., 1924. 550 pp. $3.50.*

The field of economic geography, while of considerable importance, has been rather neglected until recent years. The authors, who designed the book primarily for college students, have taken as their central theme the idea that human adjustment to geographic en-

vironment is the keynote of modern geography. Emphasis is laid on cause and effect relations; the attempt is made to show how peoples, in pursuing their economic activities, have adjusted themselves to their physical surroundings. The greater part of the text is descriptive; one of the most valuable features is the profusion of maps, most of them prepared by the United States Department of Agriculture, with which the reading-matter is illustrated. Discriminating use is made of graphic presentation. Excellent references are provided at the end of each chapter for those who wish to go into more detail. In the half of the volume devoted to the United States, chapters are arranged according to crops or industries described; the remainder of the book is divided by territories.